Management Software

AT-S100

User's Guide

For use with the AT-9000/28
Managed Layer 2
GE ecoSwitch

Version 1.0.1

613-001059 Rev. A

Allied Telesis™

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Preface

The AT-S100 Management Software is the operating system for the AT-9000/28 Managed Layer 2 GE ecoSwitch. This guide describes the commands included in the management software that you use to control and monitor the operating parameters of the AT-9000/28 switch.

This Preface contains the following sections:

- “Document Conventions” on page 12
- “Where to Find Web-based Guides” on page 13
- “Contacting Allied Telesis” on page 14

Document Conventions

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Where to Find Web-based Guides

The installation and user guides for all Allied Telesis products are available in portable document format (PDF) on our web site at **www.alliedtelesis.com**. You can view the documents online or download them onto a local workstation or server.

For details about the features and functions of the AT-9000/28 switch, see the following installation guide on our web site:

- *AT-9000/28 Managed Layer 2 GE ecoSwitch Installation Guide* (part number 613-001058)

Contacting Allied Telesis

This section provides Allied Telesis contact information for technical support as well as sales and corporate information.

Online Support

You can request technical support online by accessing the Allied Telesis Knowledge Base: **www.alliedtelesis.com/support/kb.aspx**. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Email and Telephone Support

For Technical Support via email or telephone, refer to the Support section of the Allied Telesis web site: **www.alliedtelesis.com**.

Warranty

The AT-9000/28 9000 Series Managed Layer 2 GE ecoSwitch is covered under a Lifetime Warranty (Two Years Fan & Power Supply). For warranty information, go to the Allied Telesis web site at **www.alliedtelesis.com**.

Returning Products

Products for return or repair must first be assigned a return materials authorization (RMA) number. A product sent to Allied Telesis without an RMA number will be returned to the sender at the sender's expense. For instructions on how to obtain an RMA number, go to the Support section on our web site at **www.alliedtelesis.com/support.rma.aspx**.

Sales or Corporate Information

You can contact Allied Telesis for sales or corporate information through our web site at **www.alliedtelesis.com**.

Management Software Updates

New releases of the management software for our managed products are available from the following Internet sites:

- Allied Telesis web site: **www.alliedtelesis.com**
- Allied Telesis FTP server: **ftp://ftp.alliedtelesis.com**

If the FTP server prompts you to log on, enter "anonymous" as the user name and your email address as the password.

Chapter 1

Getting Started with the Command Line Interface

This chapter describes the command modes of the AT-S100 command line interface (CLI) and how to access them. This chapter includes the following sections:

- ❒ “Introducing the Command Modes” on page 16
- ❒ “Starting the Command Line Interface” on page 23
- ❒ “Formatting Commands” on page 24

Introducing the Command Modes

This chapter describes the CLI command modes and how to access the command line interface. There are 5 command modes:

- Privileged Executive
- Configuration Terminal
- VLAN Configuration
- Interface Configuration
- Line

In the AT-S100 software, the commands are accessed through a hierarchy of command modes. Each command mode contains a subset of commands that are available within that mode. For an illustration of the command modes, see Figure 1 on page 17.

When you log on to the CLI interface, the default command mode that you access depends on your login id. There are two default login ids that are sent from the factory. The operator login id enables you to display information about the software configuration. With this login, you access the View command mode automatically. The manager login id permits full administrator capabilities. With this login, you access the Privileged Executive mode by default.

You enter a specific command to navigate from one command mode to another. For example, to access the Configuration Terminal mode, enter the CONFIGURE TERMINAL command from the Privileged Executive mode. Once you enter a new command mode, the AT-S100 prompt changes to indicate the new mode.

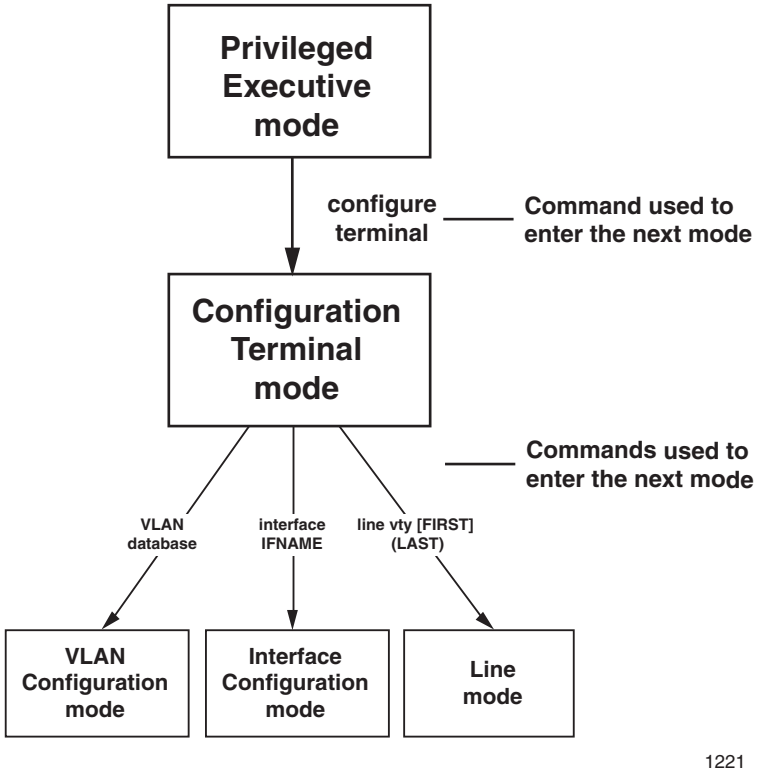

Figure 1. AT-S100 Command Modes

See Table 1 for information about the commands used to access the modes and their respective prompts.

Table 1. Command Modes

Command Mode	Prompt	Description
Privileged Executive mode	Switch#	❒ This is the default command mode for the manager login. ❒ Enter the EXIT or LOGOUT commands to exit the software.
Configuration Terminal Mode	Switch(config)#	❒ Use the CONFIGURE command to enter this mode from the Privileged Executive mode. ❒ To return to the Privileged Executive mode, enter the EXIT command.

Table 1. Command Modes (Continued)

Command Mode	Prompt	Description
Interface Configuration	Switch(config-if)#	❒ To access interface 1, enter the following from the Configuration Terminal mode: `interface ge1` ❒ Enter the EXIT command to return to the Configuration Terminal mode.
VLAN Configuration	Switch(config-vlan)#	❒ From the Configuration Terminal mode, type the VLAN DATABASE command. ❒ Enter the EXIT command to return to the Configuration Terminal mode.
Line	Switch(config-line)	❒ From the Configuration Terminal mode, type the LINE VTY command. ❒ Enter the EXIT command to return to the Configuration Terminal mode.

In addition, there are commands that allow you to move between the modes. For example, typing the EXIT command when you are in the Interface Configuration mode returns you to the Configuration Terminal mode. From the Privilege Executive mode, the LOGOUT command exits the software.

If you enter a command that is not accessible from a command mode, the software displays a “command not found” message. For example, you can enter the SHOW SNMP command from the Privileged Executive mode, but you cannot enter this command from the VLAN Configuration mode. Within the manual, a command mode is listed for each command.

See the following sections for a description of each command mode:

- ❒ “Privileged Executive Command Mode” on page 18
- ❒ “Configuration Terminal Mode” on page 19
- ❒ “Interface Configuration Command Mode” on page 20
- ❒ “VLAN Configuration Command Mode” on page 21
- ❒ “Line Mode Commands” on page 22

Privileged Executive Command Mode

The Privileged Executive command mode is the default command mode for the manager login. The commands in this mode permit you to perform system level commands such as rebooting the system, copying configuration files, and clearing statistics. The prompt changes to “Switch#” to indicate the Privileged Executive mode.

To access the Configuration Terminal mode from the Privileged Executive mode, enter the CONFIGURE TERMINAL command. To return to the Privileged Executive mode, enter the EXIT command.

See Table 2 for a sample list of commands that can be access from the Privileged Executive command mode. For detailed information about the commands in this mode, see Chapter 2, "Privileged Executive Mode Commands" on page 29.

Table 2. Privileged Executive Command Mode Commands

Command	Description
COPY RUN START	Saves the current configuration.
CONFIGURE TERMINAL	Changes the mode to the Configuration Terminal Mode.
COPY	Uploads the configuration file to an image or configuration file.
SHOW INTERFACE	Displays interface configuration and status.
SYSTEM FACTORY-RESET	Resets the AT-S100 software to the factory default settings

Configuration Terminal Mode

The Configuration Terminal mode allows you to configure advanced system features such as broadcast storm control, SNMP, and STP. To access this mode, you must first access the Privileged Executive mode. After you have accessed the Privileged Executive mode, type CONFIGURE TERMINAL to access the Configuration Terminal mode. The prompt changes to "Switch(config)#" to indicate the software has entered the Configuration Terminal mode.

See Table 3 for a sample list of commands that can be accessed from the Configuration Terminal mode. For detailed information about the commands in this mode, see the Chapter 3, "Configuration Terminal Mode Commands" on page 61.

Table 3. Configuration Terminal Command Mode Commands

Command	Description
IP-ACCESS-LIST	Creates an access list.
LINE CONSOLE	Sets the console configuration. Accesses the Line mode.
HOSTNAME	Sets the name of the system.

Table 3. Configuration Terminal Command Mode Commands (Continued)

Command	Description
INTERFACE	Accesses the Interface Configuration command mode (you must also specify an interface).
SNMP-SERVER ENABLE	Enables an SNMP agent on the switch.
USERNAME	Sets a system user name and password.

Interface Configuration Command Mode

The Interface Configuration command mode allows you to configure features that pertain to the port and VLAN interfaces such as flow control and duplex mode. To access this mode, you must first access the Privileged Executive and Configuration Terminal modes, depending on your login id.

There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with “ge.” For example, to access port 5 enter the following from the Configuration Terminal mode:

```
interface ge5
```

The prompt changes to “Switch(config-if)#” to indicate the Interface Configuration mode.

To specify a VLAN interface, precede the VLAN ID with “vlan.” For example, to access VLAN 1 (the default VLAN), enter the following from the Configuration Terminal mode:

```
interface vlan1
```

After you have accessed the Interface Configuration mode, the commands you enter apply only to the interface specified in the Configuration Terminal mode. For example, if you enter “interface ge3” in the Configuration Terminal mode, all of the subsequent commands that you enter apply to interface 3 only. To perform interface-specific commands on another interface, exit the Interface mode, and specify the new interface in the Configuration Terminal mode.

For a sample list of commands that can be accessed from the Interface Configuration command mode, see Table 4 on page 21. For more detailed information about the commands in the Interface Configuration mode, see Chapter 4, “Interface Configuration Mode Commands” on page 107.

Table 4. Interface Configuration Command Mode Commands

Commands	Description
DOT1X MAX-REQ	Sets the maximum number of reauthentication attempts after authentication fails.
FLOWCONTROL ON	Enables flow control and configures the flow control mode for the interface.
IP ADDRESS	Sets an IP address for the switch or specifies that the switch uses a DHCP client to obtain an IP address.
MAC-ADDRESS	Sets the MAC address for a specified interface.
SHUTDOWN	Disables an interface.
SPEED	Sets the speed and duplex mode for an interface.

VLAN Configuration Command Mode

The VLAN Configuration command mode allows you to configure commands that are applied to a specific VLAN interface. For instance, you can assign an IP address to a VLAN interface in this mode.

To access this mode, you must first access the View, Privileged Executive, and Configuration Terminal modes, depending on your login id. From the Configuration Terminal command mode, type the VLAN DATABASE command. The prompt changes to "Switch(config-vlan)#" to indicate the VLAN Configuration mode.

After you have accessed the VLAN Configuration mode, enter commands that apply to a specific VLAN. For a sample list of commands that can be accessed from the VLAN Configuration command mode, see Table 5 on page 21. For more detailed information about the commands in the VLAN Configuration mode, see Chapter 9, "Virtual Local Area Networks (VLAN) Commands" on page 191.

The default VLAN has a VLAN ID of 1 and it includes all 28 ports. You can configure up to 25 VLANs, with VLAN IDs of between 2 and 4094. However, you cannot configure VLAN 1 as it always remains the default VLAN. You can display information about this VLAN.

Table 5. VLAN Commands

Commands	Description
SHOW RUNNING-CONFIGURATION SWITCH VLAN	Displays information about VLANs on the switch.

Table 5. VLAN Commands (Continued)

Commands	Description
VLAN	Creates a VLAN and enables it.
VLAN NAME	Assigns a name to a VLAN.
VLAN STATE	Sets the operational state of the VLAN.

Line Mode Commands

To Line mode permits you to assign a console timeout, the length of the console lines, and the user privilege level when creating a Telnet connection. Access the Line mode through the Configuration Terminal mode, with the LINE VTY command. The prompt changes to “Switch(config-line)#” to indicate the Line mode.

There is one Line mode command, see “LOGIN REMOTELOCAL” on page 145.

To exit the Line mode and return to the Configuration Terminal mode, use the EXIT command.

Starting the Command Line Interface

To start the command line interface, perform the following procedure:

1. Type the user id and password.

   There are two default user ids and passwords. For the system administrator login, the default user id is "manager" and the default password is "friend."

   A command line prompt is displayed in Figure 2.

```
Username:manager
Password:
(none)#
```

Figure 2. Command Line Login Screen

The default switch name is "(none)" and the pound sign (#) prompt indicates the Privileged Executive mode which is the default mode accessed by the manager login.

Formatting Commands

The AT-S100 software command line interface follows the same formatting conventions in all of the command modes. There are command line interface features which apply to the general use of the command line and command syntax conventions which apply when entering the commands. See the following sections.

Command Line Interface Features

The following features are supported in the command line interface:

- Command history - Use the up and down arrow keys.
- Context-specific help - Press the question mark key, ?, to display a list of permitted parameters or all of the available commands for a particular command mode. There are two formatting options:

  – command ? - List the keywords or arguments that are required by a particular command. A space between a command and a question mark is required.

  – abbreviated command? - Provides a list of commands that begin with a particular character string. There is no space between the command and the question mark.

- Keyword abbreviations - Any keyword can be recognized by typing an unambiguous prefix, for example, type “sh” and the software responds with “show.”
- Tab key - Pressing the Tab key fills in the rest of the keyword automatically. For example, typing “di” and then pressing the Tab key enters “disable” on the command line.

Command Formatting Conventions

The following formatting conventions are used in this manual:

- `screen text font` - This font illustrates the format of a command and command examples.
- ALL CAPITAL LETTERS- All capital letters indicate a command for you to enter.
- [ ] - Brackets indicate optional parameters.
- | - Vertical line separates parameter options for you to choose from.

Specifying an Interface

The AT-9000 switch has 28 ports. Within the command line interface, specify each interface with “ge” and the number of the interface. For example, interface 3 is specified as “ge3.” For more information about the ports, see Port Descriptions.

Command Line Syntax Conventions

The following table describes the conventions used in the AT-S100 command interface.

Table 6. Command Line Syntax Conventions

Convention	Description	Example
A.B.C.D/M	Indicates an IP address and a subnet mask.	192.68.1.11/24
line	Indicates a line of text that accepts spaces without quotation marks.	Switch 24, San Jose, Building 4
string	Indicates a string of alphanumeric characters, including special characters such as spaces. You must place quotation marks around a value with spaces.	"Switch 24, San Jose, Building 4"
int	Indicates a whole integer.	202
IFNAME or IF_NAME	Indicates an interface name. Specify values ge1 through ge28.	ge3
mask	Indicates a subnet mask.	255.255.240.0
sec	Indicates seconds.	120
min	Indicates minutes.	8
VLANID	Indicates a VLAN instance (including name and VLAN identifier).	vlan3

Section I

Command Modes

The chapters in this section provide information and procedures for basic switch setup using the AT-S100 Management Software. The following chapters are provided:

- Chapter 2, “Privileged Executive Mode Commands” on page 29
- Chapter 3, “Configuration Terminal Mode Commands” on page 61
- Chapter 4, “Interface Configuration Mode Commands” on page 107

Chapter 2

Privileged Executive Mode Commands

This chapter describes the commands in the Privileged Executive mode which are used to perform general switch functions such as copying configuration file and displaying interface and MAC address table information. This chapter contains the following commands:

- ❒ “CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 30
- ❒ “CLEAR MAC ADDRESS-TABLE MULTICAST” on page 31
- ❒ “CLEAR MAC ADDRESS-TABLE STATIC” on page 32
- ❒ “CONFIGURE TERMINAL” on page 33
- ❒ “COPY” on page 34
- ❒ “COPY RUN START” on page 35
- ❒ “DOWNLOAD A.B.C.D FILE-NAME” on page 36
- ❒ “EXIT” on page 37
- ❒ “LOGOUT” on page 38
- ❒ “SHOW INTERFACE” on page 39
- ❒ “SHOW MAC ADDRESS-TABLE” on page 41
- ❒ “SHOW MAC ADDRESS-TABLE AGEING-TIME” on page 43
- ❒ “SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45
- ❒ “SHOW MAC ADDRESS-TABLE INTERFACE” on page 47
- ❒ “SHOW MAC ADDRESS-TABLE STATIC” on page 49
- ❒ “SHOW MAC ADDRESS-TABLE VLAN Command” on page 51
- ❒ “SHOW RUNNING-CONFIG INTERFACE” on page 53
- ❒ “SHOW SPANNING-TREE” on page 55
- ❒ “SHOW STATIC-CHANNEL-GROUP” on page 57
- ❒ “SHOW USER-PRIORITY” on page 58
- ❒ “SYSTEM FACTORY-RESET” on page 59
- ❒ “SYSTEM REBOOT” on page 60

Note
For VLAN-specific commands, see Chapter 9, “Virtual Local Area Networks (VLAN) Commands” on page 191.

CLEAR MAC ADDRESS-TABLE DYNAMIC

Syntax

```
clear mac address-table dynamic|address HHHH.HHHH.HHHH
|interface ge<1-28>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Indicates the name of an interface.
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE DYNAMIC command to remove a dynamic MAC address from the switch. You can remove all of the dynamic MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

Command Mode

Privileged Executive mode

Examples

To remove dynamic MAC address 0030.846e.bac7 from the MAC address table, use the following command:

```
switch#clear mac address-table dynamic address
0030.846e.bac7
```

To remove all dynamic MAC addresses from the MAC address table, use the following command:

```
switch#clear mac address-table dynamic
```

Related Commands

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 31

“CLEAR MAC ADDRESS-TABLE STATIC” on page 32

CLEAR MAC ADDRESS-TABLE MULTICAST

Syntax

```
clear mac address-table multicast|address MACADDR
|interface ge<1-28>|vlan VID
```

Parameters

address	Specifies a multicast MAC address in the following format: HHHH.HHHH.HHHH
interface	Indicates the name of an interface.
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE MULTICAST command to remove a multicast MAC address from the switch. You can remove all of the multicast MAC addresses, specific multicast MAC addresses, or all multicast MAC addresses assigned to an VLAN.

Command Mode

Privileged Executive mode

Examples

To remove multicast MAC address 0100.5100.0001 from the MAC address table, use the following command:

```
switch#clear mac address-table multicast address
0100.5100.0001
```

To remove all multicast MAC addresses from the MAC address table, use the following command:

```
switch#clear mac address-table multicast
```

Related Commands

"CLEAR MAC ADDRESS-TABLE DYNAMIC" on page 30

"CLEAR MAC ADDRESS-TABLE STATIC" on page 32

CLEAR MAC ADDRESS-TABLE STATIC

Syntax

```
clear mac address-table static|address HHHH.HHHH.HHHH
|interface ge<1-28>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Indicates the name of an interface.
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE STATIC command remove static MAC addresses from the switch. You can remove all of the static MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

Command Mode

Privileged Executive mode

Examples

To remove static MAC address 0000.cd28.0752 from the MAC address table, use the following command:

```
switch#clear mac address-table static address
0000.cd28.0752
```

To remove all static MAC addresses from the MAC address table, use the following command:

```
switch#clear mac address-table static
```

Related Commands

“CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 30

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 31

CONFIGURE TERMINAL

Syntax

```
configure terminal
```

Parameters

none

Description

Use this command to enter the Configuration Terminal command mode. After you enter this command, the command prompt changes to "(config)#" to indicate the new mode.

To exit the Configure Terminal command mode, enter EXIT or CTRL Z.

For a description of the Configuration Terminal mode, see "Configuration Terminal Mode" on page 19. For information about the commands in the Configuration Terminal mode, see Chapter 3, "Configuration Terminal Mode Commands" on page 61.

Command Mode

Privileged Executive mode

Example

To enter the Configure Terminal command mode, enter the following command:

```
switch#configure terminal
```

The prompt changes to:

```
Switch(config)#
```

Related Commands

none

COPY

Syntax

```
copy running-config startup-config
```

Parameters

running-config	Indicates the running configuration file.
startup-config	Indicates the start-up configuration file.

Description

Use this command to copy configuration files. List the running configuration and then list the start-up configuration file.

Command Mode

Privileged Executive mode

Example

In the following example, the running configuration file is copied to the startup configuration file which is named “startup-config:”

```
switch#copy running-config startup-config
```

The software displays the following:

```
Building configuration...
[OK]
```

Related Commands

“COPY RUN START” on page 35

COPY RUN START

Syntax

```
copy run start
```

Parameters

none

Description

Use the COPY RUN START command to save your current configuration to the start-up configuration file, called "startup-config," on the switch.

Command Mode

Privileged Executive mode

Example

The following command saves the current configuration on the switch to the start-up configuration file called startup-config:

```
switch# copy run start
```

Related Commands

"COPY" on page 34

DOWNLOAD A.B.C.D FILE-NAME

Syntax

```
download A.B.C.D FILENAME
```

Parameters

A.B.C.D	Indicates the IP address of an TFTP server. Specify the IP address in the following format: xxx.xxx.xxx.xxx
FILENAME	Specifies the filename of a software image file.

Description

Use this command to download a software image from an TFTP server onto the switch.

Command Mode

Privileged Executive mode

Examples

The following command uses a TFTP server, with an IP address of 189.11.1.1, to download the file called “ATS100_v100.img” onto the switch:

```
switch#download 189.11.1.1 ATS100_v100.img
```

Related Commands

none

EXIT

Syntax

```
exit
```

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to "Switchname#" to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

The following commands exit the Configuration Terminal mode and returns the software to the Privileged Executive mode:

```
switch#configure terminal

switch(config)#exit

switch#
```

Related Commands

none

LOGOUT

Syntax

```
logout
```

Parameters

none

Description

Use the LOGOUT command to quit the Privileged Executive mode and log out of the software.

Command Mode

Privileged Executive mode

Example

The following is an example of the LOGOUT command:

```
switch#logout
```

Related Commands

none

SHOW INTERFACE

Syntax

```
show interface IFNAME
```

Parameters

IFNAME — Specifies the name of an interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW INTERFACE command to display the configuration and status of an interface. If you do not specify an interface, this command displays the status of all the interfaces.

Command Mode

Privileged Executive mode

Example

The following is an example of the SHOW INTERFACE command on port 1 and the sample output:

```
switch#show interface ge1

Interface ge1
   Hardware is Ethernet, address is 0004.2104.0801 (bia
004.2104.0801)
   index 2001 metric 1 mtu 1500 duplex-full arp ageing
timeout 0
   speed unknown mdix mdi
   <UP,BROADCAST,MULTICAST>
   VRF Binding: Not bound
       input packets 013884, bytes 01642232, multicast
packets 07691 broadcast packets 06185
   64-byte packets 05968, 65-127 packets 05346, 128-255
packets 01293
   245-511 packets 01366, 512-1023 packets 03, >1024 packets
00
   dropped 00, jabber 00 CRC error 03 undersize frames 00
   oversize frames 00, fragments 00 collisions 00
output packets 092, bytes 05898, multicast packets 092
broadcast packets 00
```

Related Commands

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

SHOW MAC ADDRESS-TABLE

Syntax

```
show mac address-table
```

Parameters

```
none
```

Description

Use the SHOW MAC ADDRESS-TABLE command to display the status of the static and dynamic MAC addresses assigned to the switch.

Command Mode

Privileged Executive mode

Example

The following command displays the settings of the MAC address table:

```
switch#show mac address-table
```

See Figure 3 for an example display.

```
(switch3)# show mac address-table
                  Mac Address Table
------------------------------------------------------------------
Vlan    MAC Address       Type        Ports       Forward
----    -----------       ----        -----       -------
1       0100.5e7f.fffa    STATIC      ge1         1
1       0000.cd14.6448    DYNAMIC     ge1         1
1       0000.f4d8.3534    DYNAMIC     ge1         1
1       0004.5a5e.6fd3    DYNAMIC     ge1         1
1       0006.5ba3.67d6    DYNAMIC     ge1         1
5       0006.5bb2.6589    DYNAMIC     ge8         1
5       0006.5bdd.6c69    DYNAMIC     ge8         1
5       0008.749c.101a    DYNAMIC     ge8         1
5       0008.74a2.04c2    DYNAMIC     ge8         1
5       0008.74cb.5fc6    DYNAMIC     ge8         1
5       0008.74d3.f02c    DYNAMIC     ge8         1
10      0008.74dd.87f7    DYNAMIC     ge12        1
10      0008.74df.29d8    DYNAMIC     ge12        1
(switch3)#
```

Figure 3. SHOW MAC ADDRESS-TABLE Command

The fields in Figure 3 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHH.HHH.HHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 43

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

“SHOW MAC ADDRESS-TABLE STATIC” on page 49

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

SHOW MAC ADDRESS-TABLE AGEING-TIME

Syntax

```
show mac address-table ageing-time
```

Parameters

none

Description

Use the SHOW MAC ADDRESS-TABLE AGEING-TIME command to display the aging time of MAC addresses assigned to the switch. By default, this value is set to 300 seconds (5 minutes).

The switch uses the aging timer to delete inactive dynamic MAC addresses from the MAC address table. When the switch detects that no packets have been sent to or received from a particular MAC address in the table after the period specified by the aging time, the switch deletes the address. Deleting aged-out MAC addresses prevents the table from becoming full of addresses of inactive nodes.

When the aging timer is set to 0, it disables the timer. No dynamic MAC addresses are aged out and the table stops learning new addresses after reaching its maximum capacity.

Command Mode

Privileged Executive mode

Example

The following command displays the MAC address aging-time:

```
switch#show mac address-table ageing-time
```

See Figure 4 for an example display.

```
(switch3)# show mac address-table aging-time
Aging-time 300

(switch3)#
```

Figure 4. SHOW MAC ADDRESS-TABLE AGING-TIME

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 41

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

“SHOW MAC ADDRESS-TABLE STATIC” on page 49

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

SHOW MAC ADDRESS-TABLE DYNAMIC

Syntax

```
show mac address-table dynamic |
begin|exclude|include|redirect
```

Parameters

dynamic	Indicates the dynamic MAC addresses.
|	Specifies output variables. Choose from the following options:
	begin — Indicates to begin with a line that matches.
	exclude — Specifies to exclude lines that match.
	include — Specifies to include lines that match.
	redirect — Indicates to redirect the output.

Description

Use the SHOW MAC ADDRESS-TABLE DYNAMIC command to display the status of the static and dynamic MAC addresses assigned to the switch.

Command Mode

Privileged Executive mode

Example

The following command displays the dynamic MAC addresses:

```
switch#show mac address-table dynamic
```

See Figure 6 for a sample display.

```
(switch3)# show mac address-table dynamic
                  Mac Address Table
------------------------------------------------------------
Vlan    MAC Address       Type        Ports       Forward
----    -----------       ----        -----       -------
1       0000.cd14.6448    DYNAMIC     ge3         1
1       0000.f4d8.3534    DYNAMIC     ge3         1
1       0004.5a5e.6fd3    DYNAMIC     ge3         1
1       0006.5ba3.67d6    DYNAMIC     ge3         1
1       0006.5bb2.6589    DYNAMIC     ge3         1
1       0006.5bdd.6c69    DYNAMIC     ge3         1
1       0008.749c.101a    DYNAMIC     ge3         1
1       0008.74a2.04c2    DYNAMIC     ge3         1
1       0008.74cb.5fc6    DYNAMIC     ge3         1
1       0008.74d3.f02c    DYNAMIC     ge3         1
1       0008.74dd.87f7    DYNAMIC     ge3         1
(switch3)#
```

Figure 5. SHOW MAC ADDRESS-TABLE DYNAMIC Command

The fields in Figure 6 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHH.HHH.HHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 41

“SHOW MAC ADDRESS-TABLE AGEING-TIME” on page 43

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

“SHOW MAC ADDRESS-TABLE STATIC” on page 49

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

SHOW MAC ADDRESS-TABLE INTERFACE

Syntax

```
show mac address-table interface ge<1-28>
```

Parameters

interface	Specifies the port interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW MAC ADDRESS-TABLE INTERFACE command to display the status of the static and dynamic MAC addresses assigned to a port.

Command Mode

Privileged Executive mode

Example

The following command displays the settings of the MAC address table on port 3:

```
switch#show mac address-table interface ge3
```

See Figure 6 for an example display.

```
(switch3)# show mac address-table interface ge3
                  Mac Address Table
-------------------------------------------------------------
Vlan    MAC Address       Type        Ports       Forward
----    -----------       ----        -----       -------
1       0100.5e7f.fffa    STATIC      ge3         1
1       0000.cd14.6448    DYNAMIC     ge3         1
1       0000.f4d8.3534    DYNAMIC     ge3         1
1       0004.5a5e.6fd3    DYNAMIC     ge3         1
1       0006.5ba3.67d6    DYNAMIC     ge3         1
1       0006.5bb2.6589    DYNAMIC     ge3         1
1       0006.5bdd.6c69    DYNAMIC     ge3         1
1       0008.749c.101a    DYNAMIC     ge3         1
1       0008.74a2.04c2    DYNAMIC     ge3         1
1       0008.74cb.5fc6    DYNAMIC     ge3         1
1       0008.74d3.f02c    DYNAMIC     ge3         1
1       0008.74dd.87f7    DYNAMIC     ge3         1
(switch3)#
```

Figure 6. SHOW MAC ADDRESS-TABLE INTERFACE Command

The fields in Figure 6 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHH.HHH.HHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 41

“SHOW MAC ADDRESS-TABLE AGEING-TIME” on page 43

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45

“SHOW MAC ADDRESS-TABLE STATIC” on page 49

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

SHOW MAC ADDRESS-TABLE STATIC

Syntax

```
show mac address-table static |
(begin|exclude|include|redirect) > WORD
```

Parameters

`static`	Indicates the static MAC addresses.	
|	Specifies output variables. Choose from the following options:	
	begin	Indicates to begin with a line that matches.
	exclude	Specifies to exclude lines that match.
	include	Specifies to include lines that match.
	redirect	Indicates to redirect the output.
>	Redirects the output of the command to a file name.	

Description

Use the SHOW MAC ADDRESS-TABLE STATIC command to display the status of the static MAC addresses assigned to the switch.

Command Mode

Privileged Executive mode

Example

The following command displays the settings of the static MAC addresses:

```
switch#show mac address-table static
```

See Figure 7 for an example display.

```
(switch3)# show mac address-table static
                  Mac Address Table
------------------------------------------------------------
Vlan    MAC Address       Type        Ports       Forward
----    -----------       ----        -----       -------
1       0100.5e7f.fffa    STATIC      ge3         1
(switch3)#
```

Figure 7. SHOW MAC ADDRESS-TABLE STATIC

The fields in Figure 8 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHH.HHH.HHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 41

“SHOW MAC ADDRESS-TABLE AGEING-TIME” on page 43

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

SHOW MAC ADDRESS-TABLE VLAN

Syntax

```
show mac address-table vlan <1-4094>
```

Parameters

vlan Specifies a VLAN ID. Enter a value between 1 and 4094.

Description

Use the SHOW MAC ADDRESS-TABLE VLAN command to display the status of both the static and dynamic MAC addresses assigned to the switch.

Command Mode

Privileged Executive mode

Example

The following command displays the MAC address configuration on VLAN 1:

```
switch#show mac address-table vlan 1
```

```
(switch3)# show mac address-table vlan 1
                  Mac Address Table
------------------------------------------------------------------
Vlan    MAC Address       Type        Ports       Forward
----    -----------       ----        -----       -------
1       0100.5e7f.fffa    STATIC      ge1         1
1       0000.cd14.6448    DYNAMIC     ge1         1
1       0000.f4d8.3534    DYNAMIC     ge1         1
1       0004.5a5e.6fd3    DYNAMIC     ge1         1
1       0006.5ba3.67d6    DYNAMIC     ge1         1
1       0006.5bb2.6589    DYNAMIC     ge8         1
1       0006.5bdd.6c69    DYNAMIC     ge8         1
1       0008.749c.101a    DYNAMIC     ge8         1
1       0008.74a2.04c2    DYNAMIC     ge8         1
1       0008.74cb.5fc6    DYNAMIC     ge8         1
1       0008.74d3.f02c    DYNAMIC     ge8         1
1       0008.74dd.87f7    DYNAMIC     ge12        1
1       0008.74df.29d8    DYNAMIC     ge12        1
1       0008.74f0.9377    DYNAMIC     ge12        1
1       0008.74fe.f3f3    DYNAMIC     ge12        1
```

Figure 8. SHOW MAC ADDRESS-TABLE VLAN Command

The fields in Figure 8 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHH.HHH.HHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 41

“SHOW MAC ADDRESS-TABLE AGEING-TIME” on page 43

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 45

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

“SHOW MAC ADDRESS-TABLE STATIC” on page 49

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
```

Parameters

INTERFACE — Indicates the interface or a list of interfaces. An interface list can consist of a port.

Note
Do not mix interface types in a list. Also, the specified interfaces must exist.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of one or more interfaces on the device.

Command Mode

All modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4:

```
switch#show running-config interface ge4
```

See Figure 13 for an example display.

```
(switch3)# show running-config interface ge4
!
interface ge4
     static channel-group 3
```

Figure 9. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of a switch for VLAN 2:

```
switch#show running-config interface vlan2
```

See Figure 13 for an example display.

```
(switch3)# show running-config interface vlan2
!
interface vlan2
!
```

Figure 10. SHOW RUNNING-CONFIG INTERFACE VLAN Example

Related Commands

“SHOW RUNNING-CONFIG” on page 96

SHOW SPANNING-TREE

Syntax

```
show spanning-tree interface INTERFACE
```

Parameters

INTERFACE	Indicates the name of an interface.

Description

Use the SHOW SPANNING-TREE command to display the status of the active spanning tree protocol on the specified port.

Command Mode

Privileged Executive mode

Example

The following command displays the spanning tree configuration on port 1:

```
switch#show spanning-tree interface ge1
```

This command displays a variety of parameters. An example of page 1 of the display is shown in Figure 11 on page 56.

```
(switch3)# show spanning-tree interface ge1
% 1: Bridge up - Spanning Tree Disabled
% 1: Root Path Cost 0 - Root Port 0 - Bridge Priority 32768
% 1: Forward Delay 15 - Hello Time 2 - Max Age 20
% 1: Root Id 80000012341212ab
% 1: Bridge Id 80000012341212ab
% 1: last topology change Sat Jan 1 00:00:18 2008
% 1: portfast bpdu-filter disabled
% 1: portfast bpdu-guard disabled
% 1: portfast errdisable timeout disabled
% 1: portfast errdisable timeout interval 300 sec
% 1:    ge1: Port 2001 - Id 87d1 - Role Disabled - State Fwd
% 1:    ge1: Designated Path Cost 0
% 1:    ge1: Configured Path Cost 200000 - Add type Explicit ref
count 1
% 1:    ge1: Designated Port Id 87d1 - Priority 128 -
% 1:    ge1: Root 80000012341212ab
% 1:    ge1: Designated Bridge 80000012341212ab
% 1:    ge1: Message Age 0 - Max Age 20
% 1:    ge1: Hello Time 2 - Forward Delay 15
% 1:    ge1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 -
topo change timer 0
% 1:    ge1: forward-transitions 2
% 1:    ge1: Version Rapid Spanning Tree Protocol - Received None
Send RSTP
--More--
```

Figure 11. SHOW SPANNING-TREE Command, page 1

See Figure 12 for page 2 of the display.

```
% 1:    ge1: No portfast configured - Current portfast off
% 1:    ge1: portfast bpdu-guard default - Current portfast bpdu-
guard off
% 1:    ge1: portfast bpdu-filter default - Current portfast bpdu-
guard off
% 1:    ge1: no root guard configured - Current root guard off
% 1:    ge1: Configured Link Type point-to-point - Current point-
to-point
%
(switch3)#
```

Figure 12. SHOW SPANNING-TREE Command, page 2

Related Commands

See Chapter 8, “Spanning Tree Protocol (STP) Commands” on page 179.

SHOW STATIC-CHANNEL-GROUP

Syntax

```
show static-channel-group
```

Parameters

none

Description

Use the SHOW STATIC-CHANNEL-GROUP command to display the static-channel groups configured on the switch.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW STATIC-CHANNEL-GROUP command and a sample of the output:

```
switch3#show static-channel-group
```

See Figure 13 for an example display.

```
(switch3)# show static-channel-group
        Static Aggregator: sa3
        Type: src-dst-mac
        Member: ge9
(switch3)#
```

Figure 13. SHOW STATIC-CHANNEL-GROUP

Related Commands

"STATIC-CHANNEL-GROUP" on page 127

SHOW USER-PRIORITY

Syntax

```
show user-priority interface INTERFACE
```

Parameters

INTERFACE	Indicates the name of an interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW USER-PRIORITY command to display the user priority value on the specified port.

Command Mode

Privileged Executive mode

Example

The following command displays the user-priority value on port 8:

```
switch#show user-priority interface ge8
```

The following is an example display:

```
Default user priority: 7
```

Related Commands

“USER-PRIORITY” on page 139

SYSTEM FACTORY-RESET

Syntax

```
system factory-reset
```

Parameters

none

Description

Use the SYSTEM FACTORY-RESET command to reset the AT-S100 software to the factory default settings. When you enter this command, you will lose the running configuration.

Caution
Before you enter this command, you may want to copy your current configuration. See "COPY" on page 34.

Command Mode

Privileged Executive mode

Example

The following command sets the AT-S100 software to the factory default settings:

```
switch# system factory-reset
```

You are prompted with the following questions:

```
Will lose running configuration and system will reboot?
(Y/N)
```

To continue, enter Y for yes.

Related Commands

"COPY" on page 34

"SYSTEM REBOOT" on page 60

SYSTEM REBOOT

Syntax

```
system reboot
```

Parameters

none

Description

Use the SYSTEM REBOOT command to reboot the switch.

Command Mode

Privileged Executive mode

Example

The following command reboots the switch:

```
switch# system reboot
```

Related Commands

“SYSTEM FACTORY-RESET” on page 59

Chapter 3

Configuration Terminal Mode Commands

The commands in this chapter are accessed through the Configuration Terminal mode. The commands in this mode allow you to configure debugging, MAC addresses, and Network Time Protocol (NTP) commands.

This chapter contains the following commands:

- ❒ “CLOCK SUMMER-TIME RECURRING” on page 63
- ❒ “CLOCK TIMEZONE” on page 65
- ❒ “CRYPTO KEY GENERATE USERKEY” on page 67
- ❒ “DOT1X SYSTEM-AUTH-CTRL” on page 69
- ❒ “ENABLE PASSWORD” on page 70
- ❒ “ENABLE SECRET” on page 71
- ❒ “EXIT” on page 72
- ❒ “HOSTNAME” on page 74
- ❒ “INTERFACE” on page 75
- ❒ “IP IGMP SNOOPING” on page 77
- ❒ “IP ROUTE” on page 78
- ❒ “IP SSH RSA KEYPAIR-NAME” on page 79
- ❒ “IP SSH VERSION” on page 80
- ❒ “LINE CONSOLE” on page 81
- ❒ “MAC ADDRESS-TABLE AGEING-TIME” on page 82
- ❒ “MAC ADDRESS-TABLE STATIC DISCARD” on page 83
- ❒ “MAC ADDRESS-TABLE STATIC FORWARD” on page 85
- ❒ “MLS QOS” on page 87
- ❒ “NTP AUTHENTICATE” on page 89
- ❒ “NTP AUTHENTICATION-KEY” on page 90
- ❒ “NTP SERVER” on page 91
- ❒ “NTP TRUSTED-KEY” on page 93
- ❒ “SHOW LIST” on page 94
- ❒ “SHOW RUNNING-CONFIG” on page 96
- ❒ “SHOW RUNNING-CONFIG COMMUNITY-LIST” on page 101

- ❒ “SHOW RUNNING-CONFIG INTERFACE” on page 103
- ❒ “USERNAME” on page 105

Note
For GVRP-specific commands, see Chapter 6, “GVRP Commands” on page 155

Note
For VLAN-specific commands, see Chapter 9, “Virtual Local Area Networks (VLAN) Commands” on page 191.

CLOCK SUMMER-TIME RECURRING

Syntax

```
clock summer-time ZONENAME recurring START-WEEK START-
DAY START-MONTH START-TIME END-WEEK END-DAY END-MONTH
END-TIME <1-180>
```

```
no clock summer-time
```

Parameters

ZONENAME	Describes the summertime zone, up to 6 characters long.
recurring	Specifies that this summertime setting applies every year from now on.
START-WEEK	Indicates the week of the month when summertime starts in the range of 1 to 5. The value of 5 indicates the last week that has specified day in it for the specified month. For example, to start summertime on the last Sunday of the month, enter 5 for START-WEEK and "sun" for START-DAY.
START-DAY	Indicates the day of the week when summertime starts. Use the first three letters of each day of the week. Valid values are "mon," "tue," "wed," "thu," "fri," "sat," and "sun."
START-MONTH	Specifies the month that summer time starts. Use the first three letters of each month to indicate the name of a month. Valid values are "jan, "feb," "mar," "apr," "may," "jun," "apr," "may," "jun," "jul," "aug," "sep," "oct," "nov," and "dec."
START-TIME	Indicates the time of day that summer time starts in 24-hour format: HH:MM where H represents hours and M represents minutes.
END-WEEK	Indicates the week of the month when summer time ends in the range of 1 through 5. The value of 5 indicates the last week of the month.
END-DAY	Specifies the day of the week when summer time ends. Use the first three letters of each day of the week. Valid values are "mon," "tue," "wed," "thu," "fri," "sat," and "sun."

END-MONTH	Specifies the month that summer time ends. Use the first three letters of each month to indicate the name of a month. Valid values are “jan, “feb,” “mar,” “apr,” “may,” “jun,” “apr,” “may,” “jun,” “jul,” “aug,” “sep,” “oct,” “nov,” and “dec.”
END-TIME	Indicates the time of day that summer time end in 24-hour format: HH:MM where H represents hours and M represents minutes.
<1-180>	Indicates the time offset in minutes.

Description

Use the CLOCK SUMMER-TIME RECURRING command to define the start and end of daylight savings time for every year. In addition, this command allows you to specify the offset value to Standard Time.

The **no** parameter added to this command removes the summertime setting from the software, including the recurring dates.

Command Mode

Configuration Terminal mode

Example

To set a summer time definition for New Zealand using the official NZST (UTC+12:00) as the standard time and NZST (UTC+13:00) as summertime, with summertime set to start on the first Sunday in October and end on the third Sunday in March, use the following commands:

```
switch#configure terminal

switch(config)#clock summer-time NZDT recurring 1 sun
oct 2:00 3 sun mar 2:00 60
```

Related Commands

“CLOCK TIMEZONE” on page 65

“NTP AUTHENTICATE” on page 89

CLOCK TIMEZONE

Syntax

```
clock timezone <timezone> minus|plus <0-12>
```

```
no clock timezone
```

Parameters

timezone	Specifies a description of the timezone up to 6 characters in length.
minus	Indicates the timezone is behind UTC.
plus	Indicates the timezone is ahead of UTC.
<0-12>	Specifies the offset, in hours, from UTC.

Description

Use the CLOCK TIMEZONE command to define the clock timezone in hours. The timezone is set as an offset to the UTC of up to 12 hours. By default, the system time is set to UTC.

Caution
Configure the time zone **before** setting the local time on the system. If you set the time zone after setting the local time, the software applies the new offset to the local time.

The no parameter to reset the system time to UTC.

Command Mode

Configuration Terminal mode

Examples

To set the time zone to New Zealand Standard Time with an offset from UTC of +12 hours, use the following commands:

```
switch#configure terminal
```

```
switch(config)#clock timezone NZST plus 12
```

To return the time zone to UTC with no offsets, use the following commands:

```
switch#configure terminal

switch(config)#no clock timezone
```

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 63

CRYPTO KEY GENERATE USERKEY

Syntax

```
crypto key generate userkey USERNAME rsa <768-32768>
```

```
no crypto key generate userkey
```

Parameters

USERNAME	Specifies the name of the user. This parameter must begin with a letter. Valid characters are all numbers, letters, and underscores, hyphens, and periods.
rsa	Creates an RSA userkey for SSH version 2 connections.
<768-32768>	The length, in bits, of the generated key. The default is 1,024 bits.

Description

Use the CRYPTO KEY GENERATE USERKEY command to generate public and private keys for an SSH user using the RSA cryptography algorithm. To use public key authentication, copy the public key of the user onto the remote SSH server.

Caution
This command is not saved in the software configuration. However, the device saves the keys generated by this command in the non-volatile memory.

Command Mode

Configuration Terminal mode

Examples

To generate a 2048-bit RSA user key for SSH version 2 connections for a user named "bob," use the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto key generate userkey bob rsa
2048
```

To generate an RSA user key for a user named “lapo,” use the following commands:

```
switch#configure terminal

switch(config)#crypto key generate userkey lapo rsa
```

Related Commands

none

DOT1X SYSTEM-AUTH-CTRL

Syntax

```
dot1x system-auth-ctrl
```

Parameters

system-auth-ctrl Enable global interface authentication.

Description

Use the DOT1X SYSTEM-AUTH-CTRL command to enable authentication globally on interfaces 1 through 28. Global authentication is disabled by default.

Command Mode

Configuration Terminal mode

Example

The following commands enable 802.1x Port Based Access Control on all interfaces:

```
switch#configure terminal

switch(config)#dot1x system-auth-ctrl
```

Related Commands

"SHOW DOT1X ALL" on page 149

ENABLE PASSWORD

Syntax

```
enable password (8) LINE
```

Parameters

8	Specifies a hidden password will follow. This is an optional parameter.
LINE	Specifies a password for the Privileged Executive Mode. Enter an alphanumeric value.

Description

Use the ENABLE PASSWORD command to assign a password for the commands in the Privileged Executive mode. By default, there is no password assigned for this mode. For information about the Privileged Executive mode commands, see “Privileged Executive Command Mode” on page 18.

Command Mode

Configuration Terminal mode

Example

The following commands assign the Privileged Executive mode password to “rose7:”

```
switch#configure terminal

switch(config)#enable password rose7
```

Related Commands

“ENABLE SECRET” on page 71

ENABLE SECRET

Syntax

```
enable secret (8) LINE
```

Parameters

8 Specifies a hidden password will follow. This is an optional parameter.

LINE Specifies a password for the Privileged Executive Mode. Enter an alphanumeric value.

Description

Use the ENABLE SECRET command to assign a privileged-level password, or secret. By default, there is no password assigned. For information about the Privileged Executive mode commands, see "Privileged Executive Command Mode" on page 18.

Command Mode

Configuration Terminal mode

Example

The following command assigns "aloha5551212" as the hidden password:

```
switch#configure terminal

switch(config)#enable secret 8 aloha5551212
```

Related Commands

"ENABLE PASSWORD" on page 70

EXIT

Syntax

```
exit
```

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to “Switchname#” to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

The following commands exit the Configuration Terminal mode and returns the software to the Privileged Executive mode:

```
switch#configure terminal

switch(config)#exit

switch#
```

Related Commands

none

HELP

Syntax

```
help
```

Parameters

none

Description

Use this command to display information about the CLI. The HELP command provides information about the current parameter. There are two forms of the HELP command:

- Full help is available when you enter a command followed by a space and the question mark (?). This displays all of the parameters for the command.
- Partial help is available when you enter an abbreviated command or argument immediately followed by the question mark (?) without a space. For example, "show con?" In this case, the software responds by displaying, "SHOW CONFIGURE."

Command Mode

All modes

Examples

The following is an example of full help and the resulting display:

```
switch#clear ?

ip              Internet Protocol (IP)

mac             Clear layer 2 MAC entries

spanning-tree   spanning-tree
```

The following is an example of the partial help and the resulting display:

```
switch#snmp-server u?

switch#snmp-server user
```

Related Commands

none

HOSTNAME

Syntax

```
hostname NAME
```

Parameters

NAME	Specifies the name of the switch. Enter a value between 1 and 63 alphanumeric characters. Names must start with a letter and end with a letter or digit. Within the interior of the name, there must only be letters, digits, and hyphens.

Description

Use the HOSTNAME command to assign a name to the switch. Enter a value between 1 and 63 alphanumeric characters. The name must follow the rules for ARPNET host names.

After you name the switch, the prompt changes to include the name. The new name of the switch appears in all of the command modes.

Command Mode

Configuration Terminal mode

Example

The following example assigns “Switch3” as the name of the switch and displays the new prompt:

```
none#configure terminal

none(config)#hostname Switch3

Switch3(config)#
```

Related Commands

none

INTERFACE

Syntax

```
interface IFNAME
```

Parameters

IFNAME Specifies the name of an interface which can be a port or a VLAN. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

Use the INTERFACE command to access the Interface Configuration command mode for the interface specified. After you enter the INTERFACE command, "-if" is added to the prompt. For more information about the commands included in the Interface mode, see "Interface Configuration Command Mode" on page 20.

Command Mode

Configuration Terminal mode

Examples

The following commands access the Interface mode on interface 3:

```
switch#configure terminal

switch(config)#interface ge3

switch(config-if)#
```

The following commands access the Interface mode on interface 8:

```
switch#configure terminal

switch(config)#interface ge8

switch(config-if)#
```

The following commands access the Interface mode on VLAN 1 (By default, all of the ports are assigned to VLAN 1):

```
switch#configure terminal

switch(config)#interface vlan1

switch(config-if)#
```

Related Commands

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 47

IP IGMP SNOOPING

Syntax

```
ip igmp snooping

no ip igmp snooping
```

Description

Use the IP IGMP SNOOPING command to enable IGMP Snooping on the switch or on a VLAN. When you enter this command at the Configuration Terminal mode, IGMP Snooping is enabled on the switch. When you enter this command at the VLAN Configuration mode, IGMP Snooping is enabled for the specified VLAN. By default, the IP IGMP Snooping feature is enabled.

Use the no parameter with this command to globally disable IGMP Snooping for the specified interface.

Command Mode

Configuration Terminal and VLAN Configuration modes

Examples

Use the following commands to enable IGMP Snooping on the switch:

```
switch#configure terminal

switch(config)#ip igmp snooping
```

Use the following commands to enable IGMP Snooping on the VLAN interface.

```
switch(config)#vlan database

switch(config-vlan)#ip igmp snooping
```

Related Commands

none

IP ROUTE

Syntax

```
ip route (GATEWAYIP|INTERFACE)

no ip route (GATEWAYIP|INTERFACE)
```

Parameters

GATEWAYIP	Indicates the IPV4 address and subnet mask of the gateway device in the following format: 000.000.000/0
INTERFACE	Specifies a the name of the interface (in the range of ge1 through ge28) that connects your device to the network.

Description

Use the IP ROUTE command to add a gateway address to the switch. Use the no form of this command to remove the static route from the switch.

Command Mode

Configuration Terminal mode

Examples

The following example sets the gateway IP address to 0.0.0.0 and a subnet mask of 0:

```
switch#configure terminal

switch(config)#ip route 0.0.0.0/0
```

Related Commands

“IP ADDRESS” on page 117

“IP ADDRESS DHCP” on page 119

IP SSH RSA KEYPAIR-NAME

Syntax

```
ip ssh rsa keypair-name WORD

no ip ssh rsa keypair-name
```

Parameters

WORD Specifies a name of an RSA keypair.

Description

Use the IP SSH RSA KEYPAIR-NAME command to set the name of an RSA keypair.

Use the no form of this command to remove an RSA keypair.

Command Mode

Configuration Terminal mode

Example

The following commands set the keypair name to "ssh_host_rsa_key5:"

```
switch#configure terminal

switch(config)#ip ssh rsa keypair-name
ssh_host_rsa_key5
```

Related Commands

"IP SSH VERSION" on page 80

IP SSH VERSION

Syntax

```
ip ssh version 1|2

no ip ssh version 1|2
```

Parameters

version	Indicates the SSH version number. Choose from the following options:
	1 Specifies SSH version 1.
	2 Specifies SSH version 2.

Description

Use the IP SSH VERSION command to set the SSH protocol version number.

Use the no form of this command to set the SSH version number to its default value.

Command Mode

Configuration Terminal mode

Example

The following commands set the switch to SSH version 2:

```
switch#configure terminal

switch(config)#ip ssh version 2
```

Related Commands

“IP SSH RSA KEYPAIR-NAME” on page 79

LINE CONSOLE

Syntax

```
line console 0
```

Parameters

none

Description

The LINE CONSOLE command sets the console configuration and enters the Line mode. The primary terminal line is set to line number 0. After you enter this command, the prompt changes to "switch(config-line)" to indicate the Line mode.

For more information about the LINE mode, see "Line Mode Commands" on page 22.

Command Mode

Configuration Terminal mode

Example

The following commands set the primary line console to 0:

```
switch#configure terminal

switch(config)#line console 0

switch(config-line)#
```

Related Commands

"LOGIN REMOTELOCAL" on page 145

MAC ADDRESS-TABLE AGEING-TIME

Syntax

```
mac address-table ageing-time <10-1000000>

no mac address-table ageing-time
```

Parameters

ageing-time	Indicates the ageing time in seconds. Choose a value between 10 and 1,000,000 seconds. The default is 300 seconds.

Description

Use the MAC ADDRESS-TABLE AGEING-TIME command to specify the ageing time for an entry in a MAC address table. Use the no form to reset this parameter.

Command Mode

Configuration Terminal mode

Examples

The following example sets the ageing time to 120 seconds:

```
switch# configure terminal

switch#(config)# mac address-table ageing-time 120
```

Related Commands

“MAC ADDRESS-TABLE AGEING-TIME” on page 82

“MAC ADDRESS-TABLE STATIC DISCARD” on page 83

“MAC ADDRESS-TABLE STATIC FORWARD” on page 85

MAC ADDRESS-TABLE STATIC DISCARD

Syntax

```
mac address-table static MAC discard interface IFNAME
vlan VLANID

no mac address-table static
```

Parameters

MAC	Indicates the static MAC address in the following format: MMMM.MMMM.MMMM
IFNAME	Indicates the name of the interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."
VLANID	Indicates the VLAN interface. Enter a value between 2 and 4,094. If you do not enter a value, VLAN 1 is assumed by default.

Description

Use the MAC ADDRESS-TABLE STATIC DISCARD command to delete an entry in the MAC address table. The switch forwards packets with the specified source or destination MAC address. Only unicast static addresses are supported. By default, this command is disabled.

Use the no form of this command to reset it.

Command Mode

Configuration Terminal mode

Example

The following example deletes the MAC address "000C.6E73.2BC4" on interface 4 on VLAN 9:

```
switch# configure terminal

switch#(config)# mac address-table static
000C.6E73.2BC4 discard interface ge4 vlan 9
```

Related Commands

“MAC ADDRESS-TABLE STATIC FORWARD” on page 85

“MAC ADDRESS-TABLE AGEING-TIME” on page 82

“SHOW MAC ADDRESS-TABLE” on page 41

MAC ADDRESS-TABLE STATIC FORWARD

Syntax

```
mac address-table static MAC forward interface IFNAME
vlan VLANID

no mac address-table static
```

Parameters

MAC	Indicates the static MAC address in the following format: MMMM.MMMM.MMMM
IFNAME	Indicates the name of the interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."
VLANID	Indicates the VLAN interface. Enter a value between 2 and 4094. If you do not enter a value, VLAN 1 is assumed by default.

Description

The MAC ADDRESS-TABLE STATIC FORWARD command to create an entry in the MAC address table. The switch drops packets with the specified source or destination MAC address. Only unicast static addresses are supported. By default, this command is disabled. Use the no form of this command to reset it.

Command Mode

Configuration Terminal mode

Example

The following example sets the MAC address of "000C.6E73.2BC4" on interface 3 and VLAN 2:

```
switch# configure terminal

switch#(config)# mac address-table static
000C.6E73.2BC4 forward interface ge3 vlan 2
```

Related Commands

"MAC ADDRESS-TABLE AGEING-TIME" on page 82

“MAC ADDRESS-TABLE STATIC DISCARD” on page 83

“SHOW MAC ADDRESS-TABLE” on page 41

MLS QOS

Syntax

```
mls qos <0-10> <0-7>|<0-10> <0-7>|<0-10> <0-7>|
<0-10> <0-7>|<0-10> <0-7>|0-10> <0-7>|<0-10> <0-7>|<0-
10> <0-7>|
```

Parameters

<0-10>	Specifies the weight for queue 0, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 0, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 1, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 1, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 2, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 2, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 3, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 3, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 4, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 4, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 5, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 5, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 6, where 0 indicates strict priority.

<0-7>	Specifies the priority for queue 6, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 7, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 7, where 0 indicates strict priority.

Description

The MLS QOS command to define queues for the Quality of Service feature. This command configures the default queues for any packet arriving on the specified interface. You must configure all of the queues.

Use the no form of this command to turn off the use of a default queue.

Command Mode

Configuration Terminal mode

Example

The following example sets queue 0 with a weight of 10 and a priority of 7, queue 1 with a weight of 9 and a priority of 6, and the remaining queues with a weight of 1 and a priority of 1:

```
switch# configure terminal

switch#(config)# mls qos 10 7 9 6 1 1 1 1 1 1 1 1 1 1
1
```

Related Commands

“USER-PRIORITY” on page 139

NTP AUTHENTICATE

Syntax

```
ntp authenticate

no ntp authenticate
```

Parameters

none

Description

Use the NTP AUTHENTICATE command to enable authentication of the Network Time Protocol (NTP) time source. By default, this command is disabled. To disable NTP authentication on the switch, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands enable authentication of the NTP time source:

```
switch#configure terminal

switch(config)#ntp authenticate
```

Related Commands

"CLOCK SUMMER-TIME RECURRING" on page 63

"CLOCK TIMEZONE" on page 65

"NTP TRUSTED-KEY" on page 93

NTP AUTHENTICATION-KEY

Syntax

```
ntp authentication-key KEYNUMBER <1-4294967295>
md5 KEY

no ntp authentication-key KEYNUMBER <1-4294967295>
```

Parameters

KEYNUMBER	Specifies a key number. Choose a value between 1 and 4,294,967,295. This key indicates a trusted time source.
MD5	Indicates MD5 (message digest algorithm 5) authentication.
KEY	Specifies the name of an authentication key.

Description

Use the NTP AUTHENTICATION-KEY command to define an authentication key for a trusted time source. If you set this command, the AT-S100 software only synchronizes to a system that carries one of the authentication keys specified.

By default, this command is disabled. To remove an authentication key, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands specify an authentication key of “888” and a key name of “topsecretkey:”

```
switch#configure terminal

switch(config)#ntp authentication-key 888 md5
topscretkey
```

Related Commands

“NTP AUTHENTICATE” on page 89

“NTP TRUSTED-KEY” on page 93

NTP SERVER

Syntax

```
ntp server WORD prefer|version <1-4>|key <1-
4294967295>
```

Parameters

WORD	Indicates the IP address of the NTP server. Use the following format: xxx.xxx.xxx.xxx
prefer	Specifies the software prefers this peer when possible.
version	Indicates the NTP version. Specify versions 1 through 4.
key	Indicates the peer key number that permits access to the specified NTP server.

Description

Use the NTP SERVER command to specify the IP address of the NTP server, a key to access the server, and the NTP version number. In addition, you can specify if the software prefers this NTP server over other NTP servers.

> **Note**
> To add more than one NTP server to the switch, enter a second NTP SERVER command with another IP address.

Command Mode

Configuration Terminal mode

Example

The following example sets the IP address of the NTP server to 198.11.1.9 and shows the resulting display:

```
switch#configure terminal

switch(config)#ntp server 198.11.1.9

Translating "198.11.1.9"... [OK]
```

Related Commands

“NTP AUTHENTICATE” on page 89

“NTP AUTHENTICATION-KEY” on page 90

“NTP TRUSTED-KEY” on page 93

NTP TRUSTED-KEY

Syntax

```
ntp trusted-key <1-4294967295>

no ntp trusted-key <1-4294967295>
```

Parameters

none

Description

Use the NTP TRUSTED-KEY command to specify a key number for a trusted time source. You must first define a key number with the NTP AUTHENTICATION-KEY command. Enter a value between 1 and 4294967295.

By default, no trusted keys are defined. To disable the authentication of a device, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands set the trusted key to 222,222:

```
switch#configure terminal

switch(config)#ntp trusted-key 222222
```

Related Commands

"NTP AUTHENTICATE" on page 89

"NTP AUTHENTICATION-KEY" on page 90

"NTP SERVER" on page 91

SHOW LIST

Syntax

```
show list
```

Parameters

none

Description

Use the SHOW LIST command to display a list of all the commands available in the current mode.

The display of the SHOW LIST command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

Use the following commands to display the commands available in the current mode:

```
switch#configure terminal

switch#show list
```

Figure 14 on page 95 for a sample display of the SHOW LIST command in the Privileged Executive mode.

```
(switch3)#show list
boot config-file WORD
cat WORD
clear arp-cache
clear counters IFNAME
clear gmrp statistics all
clear gmrp statistics vlanid <1-4094>
clear gvrp statistics IFNAME
clear gvrp statistics all
clear gvrp statistics all
clear ipmg
clear ipmg group *
clear ipmg group A.B.C.D
clear ipmg group A.B.C.D IFNAME
--More--
```

Figure 14. SHOW LIST Command

Related Commands

"SHOW RUNNING-CONFIG" on page 96

"SHOW RUNNING-CONFIG COMMUNITY-LIST" on page 101

"SHOW RUNNING-CONFIG INTERFACE" on page 103

SHOW RUNNING-CONFIG

Syntax

```
show running-config
```

Parameters

none

Description

Use the SHOW RUNNING-CONFIG command to display information about the system.

The display of the RUNNING-CONFIG command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

The following is an example of the SHOW RUNNING-CONFIG command and a sample of the output:

```
switch#show running-config
```

This command displays a variety of switch parameters. An example of page 1 of the display is shown in Figure 15.

```
(switch3)(config)# show running-config
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
snmp-server enable
!
ip multicast-routing
!
spanning-tree mode rstp
spanning-tree acquire
!
!
interface ge1
switchportaccess vlan 3
interface ge2
traffic-class-table user-priority 7 num-traffic-classes 2 value 0
interface ge3
switchport mode trunk
switchport trunk allowed vlan add 3
--More--
```

Figure 15. SHOW RUNNING-CONFIG Command, page 1

See Figure 16 for page 2 of the SHOW RUNNING-CONFIG command display.

```
interface ge4
static-channel-groups
interface ge5
static-channel-group4
interface ge6
user-priority 7
interface ge7
mtu 1518
interface ge8
!
interface ge9
!
interface ge10
!
!interface ge11
!
interface ge12
!
interface ge13
!
interface ge14
--More--
```

Figure 16. SHOW RUNNING-CONFIG Command, page 2

See Figure 17 for page 3 of the SHOW RUNNING-CONFIG command display.

```
interface ge15
!
interface ge16
!
interface ge17
!
interface ge18
!
interface ge19
!
interface ge20
!
interface ge21
!
!interface ge22
!
interface ge23
!
interface ge24
!
interface ge25
--More--
```

Figure 17. SHOW RUNNING-CONFIG Command, page 3

See Figure 18 for page 4 of the SHOW RUNNING-CONFIG command display.

```
interface ge26
!
interface ge27
!
interface lo
   ip address 127.0.0.1/8
   shutdown
!
interface vlan1
ip address 192.10.4.110/8
!
no snmp-server enable trap snmp auth
no spanning-tree rstp enable forward
!
clock summer-time PDT recurring 2 sun mar 02:00 1 sun nov 02:00
line con 0
   login local
line vty 0 4
   login local
!
end
--More--
```

Figure 18. SHOW RUNNING-CONFIG Command, page 4

Related Commands

“SHOW LIST” on page 94

“SHOW RUNNING-CONFIG COMMUNITY-LIST” on page 101

“SHOW RUNNING-CONFIG INTERFACE” on page 103

SHOW RUNNING-CONFIG COMMUNITY-LIST

Syntax

```
show running-config community-list
```

Parameters

```
show running-config ip igmp snooping (> WORD) |
(|begin|exclude|include|redirect LINE)
```

Parameters

>	Indicates the output redirection. Specify the following:	
	WORD	Indicates the name of the file that the output is redirected to.
|	Indicates the output redirection. Specify the following:	
	begin	Indicates to begin with a line that matches.
	exclude	Specifies to exclude lines that match.
	include	Indicates to include lines that match.
	redirect	Indicates to redirect output.
	LINE	Specifies a regular expression.

Description

Use the SHOW RUNNING-CONFIG COMMUNITY-LIST command to display information about an SNMP community.

Command Mode

All modes

Example

The following is an example of the SHOW RUNNING-CONFIG COMMUNITY-LIST command:

```
switch#show running-config community-list
```

Related Commands

“SHOW RUNNING-CONFIG” on page 96

“SNMP-SERVER VIEW” on page 177

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
```

Parameters

INTERFACE — Indicates the interface or a list of interfaces. An interface list can consist of a port, ge1 through ge28, or a VLAN.

Note
Do not mix interface types in a list. Also, the specified interfaces must exist.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of one or more interfaces on the device.

Command Mode

All modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4:

```
switch#show running-config interface ge4
```

See Figure 19 for an example display.

```
(switch3)# show running-config interface ge4
!
interface ge4
     static channel-group 3
```

Figure 19. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of a switch for VLAN 1:

```
switch#show running-config interface vlan1
```

See Figure 19 for an example display.

```
(switch3)# show running-config interface vlan2
!
interface vlan1
  ip address 192.10.8.1
```

Figure 20. SHOW RUNNING-CONFIG INTERFACE VLAN Example

Related Commands

“SHOW RUNNING-CONFIG” on page 96

USERNAME

Syntax

```
username WORD privilege <1-15> password LINE <8>
```

Parameters

WORD	Specifies a user name.
privilege	Specifies a user privilege level. Enter a value between 1 and 15. Values 1 through 14 provide operator privileges. Value 15 provides an administrator, or manager, privileges.
LINE	Specifies a password for an administrator or manager. Enter an alphanumeric value between 1 and 8 characters in length.

Description

Use the USERNAME command to set a user name, password, and privilege level. By default, the AT-S100 software provides one USERNAME type named "manager."

A manager login has permission to perform all of the AT-S100 software commands in all of the command modes.

Command Modes

Configuration Terminal mode

Examples

The following command sets the user name to "jenny," the privilege to "15," and the password to "friend:"

```
switch#configure terminal

switch(config)#username jenny privilege 15 password
friend
```

Related Commands

"ENABLE PASSWORD" on page 70

Chapter 4

Interface Configuration Mode Commands

This chapter describes the commands in the Interface Configuration mode which can access either a port or a vlan interface. For more information about this mode, see “Interface Configuration Command Mode” on page 20.

This chapter describes the following commands:

- “CHANNEL-GROUP” on page 108
- “DOT1X PORT-CONTROL” on page 109
- “EXIT” on page 110
- “FLOW CONTROL BACKPRESSURE” on page 111
- “FLOW CONTROL RECEIVE” on page 112
- “FLOW CONTROL SEND” on page 113
- “IP ADDRESS” on page 114
- “IP ADDRESS DHCP” on page 116
- “LACP SYSTEM-PRIORITY” on page 117
- “MDIX” on page 118
- “MIRROR INTERFACE DIRECTION” on page 119
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- “SHOW RUNNING-CONFIG INTERFACE” on page 122
- “SHUTDOWN” on page 124
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- “STATIC-CHANNEL-GROUP” on page 127
- “STORM-CONTROL” on page 128
- “SWITCHPORT ACCESS VLAN” on page 130
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- “SWITCHPORT PORT-SECURITY MODE” on page 134
- “SWITCHPORT TRUNK ALLOWED VLAN” on page 136
- “TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES” on page 138
- “USER-PRIORITY” on page 139

CHANNEL-GROUP

Syntax

```
channel-group <1-10> mode active|passive

no channel-group
```

Parameters

<1-10> Specifies a channel group. Enter a value between 1 and 10.

mode Specifies the status of LACP negotiation on a port. Choose from the following:

- active Enables initiation of LACP negotiation on a port.
- passive Disables initiation of LACP negotiation on a port.

Description

Use the CHANNEL-GROUP command to create a channel-group and enable or disable LACP negotiation on a port. To remove a channel group from an interface, use the no form of this command.

Command Mode

Interface Configuration mode

Example

The following commands create channel group 3 and make it active on interface 20:

```
switch# configure terminal

switch(config)# interface ge20

switch(config-if)# channel-group 3 active
```

Related Commands

“SHOW RUNNING-CONFIG” on page 96

“SHOW STATIC-CHANNEL-GROUP” on page 57

DOT1X PORT-CONTROL

Syntax

```
dot1x port-control auto|force-authorized|force-
unauthorized dir=both|in

no dot1x port-control
```

Parameters

force-authorized	Forces an interface to an authorized state.
force-unauthorized	Forces an interface to an unauthorized state.
auto	Allows a client to negotiate authentication on an interface.
dir	Specifies the packet control direction, where: both Discards receive and transmit packets from the supplicant. in Discards receive packets from the supplicant.

Description

Use the DOT1X PORT-CONTROL command to force a port state on an interface. To remove an interface from the 802.1x management, use the no form of this command.

Command Mode

Interface mode

Example

The following commands enable authentication on interface 20:

```
switch# configure terminal

switch(config)# interface ge20

switch(config-if)# dot1x port-control auto
```

Related Commands

none

EXIT

Syntax

```
exit
```

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to “Switchname#” to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

The following commands exit the Configuration Terminal mode and returns the software to the Privileged Executive mode:

```
switch#configure terminal

switch(config)#exit

switch#
```

Related Commands

none

FLOW CONTROL BACKPRESSURE

Syntax

```
flow control backpressure on|off
```

Parameters

backpressure — Specifies back-pressure flow-control in half-duplex mode. Choose from the following options.

- on — Enables back pressure.
- off — Disables back pressure.

Description

Use the FLOWCONTROL BACKPRESSURE command to enable or disable back-pressure flow-control on an interface.

Command Mode

Interface Configuration mode

Example

The following commands turn on back-pressure flow-control in half-duplex mode on port 4:

```
switch#configure terminal

switch(config)#interface ge4

switch(config-if)#flowcontol backpressure on
```

Related Commands

"FLOW CONTROL SEND" on page 113

"FLOW CONTROL RECEIVE" on page 112

FLOW CONTROL RECEIVE

Syntax

```
flow control receive on|off
```

Parameters

receive	Controls flow control on traffic that is received by an interface.
on	Enables flow control.
off	Disables flow control.

Description

Use the FLOWCONTROL RECEIVE command to enable an interface to receive traffic using flow control.

Flow control enables connected Ethernet ports (or interfaces) to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion and cannot receive any more traffic, it notifies another port to stop sending traffic until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. After the remote device receives a pause frame, the remote device stops sending data packets. This prevents the loss of data packets during the congestion period.

Command Mode

Interface Configuration mode

Example

The following commands set port 7 to flow control receive on.

```
switch#configure terminal

switch(config)#interface ge7

switch(config-if)#flow control receive on
```

Related Commands

“FLOW CONTROL BACKPRESSURE” on page 111

“FLOW CONTROL SEND” on page 113

FLOW CONTROL SEND

Syntax

```
flow control send on|off
```

Parameters

receive	Controls flow control on traffic that is sent by an interface.
on	Enables flow control.
off	Disables flow control.

Description

Use the FLOWCONTROL SEND command to enable an interface to send traffic using flow control.

Flow control enables connected Ethernet ports (or interfaces) to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion and cannot receive any more traffic, it notifies another port to stop sending traffic until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. After the remote device receives a pause frame, the remote device stops sending data packets. This prevents the loss of data packets during the congestion period.

Command Mode

Interface Configuration mode

Example

The following commands set port 20 to flow control send on.

```
switch#configure terminal
switch(config)#interface ge20
switch(config-if)#flow control send on
```

Related Commands

"FLOW CONTROL BACKPRESSURE" on page 111

"FLOW CONTROL RECEIVE" on page 112

IP ADDRESS

Syntax

```
ip address A.B.C.D/M label LABEL secondary
```

Parameters

A.B.C.D/M	Specifies the IP address of the interface followed by a slash and a subnet mask.
LABEL	Specifies the label, or name, of the IP address.
secondary	Indicates that this IP address is a secondary IP address.

Description

Use the IP ADDRESS command to assign an IP address to a VLAN interface and label the address. In addition, this command assigns the IP address as either a primary or a secondary IP address for the specified interface.

You must configure the primary IP address before the secondary IP address. Also, the secondary IP address cannot be the same address as the primary IP address.

Command Mode

Interface Configuration mode

Examples

The following commands set VLAN 1 with the primary IP address and mask of 10.0.0.1/8 and labels the IP address as “englab5.”

```
switch#configure terminal

switch(config)#interface vlan1

switch(config-if)#ip address 10.0.0.1/8 label englab5
```

The following commands set VLAN 2 with the secondary IP address and mask of 192.10.0.5/8 and labels the IP address as “Sales2.”

```
switch#configure terminal

switch(config)#interface vlan2

switch(config-if)#ip address 192.10.0.5/8 label Sales2
```

Related Commands

"IP ADDRESS DHCP" on page 116

"SHOW RUNNING-CONFIG" on page 96

IP ADDRESS DHCP

Syntax

```
ip address DHCP
```

Parameters

DHCP Indicates the DHCP client is used to obtain an IP address for this interface.

Description

Use the IP ADDRESS DHCP command to assign an IP address to an interface that is assigned by an DHCP server.

Command Mode

Interface Configuration mode

Examples

The following commands set VLAN 1 with an IP address obtained by the DHCP server:

```
switch#configure terminal

switch(config)#interface vlan1

switch(config-if)#ip address dhcp
```

The following commands set port 4 with an IP address obtained by the DHCP server:

```
switch#configure terminal

switch(config)#interface ge4

switch(config-if)#ip address dhcp
```

Related Commands

“IP ADDRESS” on page 114

“SHOW RUNNING-CONFIG” on page 96

LACP SYSTEM-PRIORITY

Syntax

```
lacp system-priority <1-65535>

no lacp system-priority
```

Parameters

<1-65535>	Specifies the LACP port priority. Lower numerical values have higher priorities.

Description

Use the LACP SYSTEM-PRIORITY command to set the system priority of a local system. This is used in determining the system responsible for resolving conflicts in the choice of aggregation groups. The default value is 32,768.

Use the no form of this command to reset the priority of the switch to the default value.

Command Mode

Interface Configuration mode

Example

The following commands set the switch with an LACP priority of 6700:

```
switch#configure terminal

switch(config)#lacp system-priority 6700
```

Related Commands

none

MDIX

Syntax

```
mdix mdi|mdix
```

Parameters

mdi Specifies the interface is forced to MDI mode.

mdix Specifies the interface is forced to MDIX mode.

Description

Use the MDIX command to force an interface to the MDI or MDIX mode.

Command Mode

Interface Configuration mode

Example

The following commands force interface 7 to MDI mode:

```
switch#configure terminal
switch(config)#interface ge7
switch(config-if)#mdix mdi
```

Related Commands

“SPEED” on page 125

MIRROR INTERFACE DIRECTION

Syntax

```
mirror interface ge<1-28> direction
both|receive|transmit

no mirror interface ge<1-28> direction
both|receive|transmit
```

Parameters

interface — Specifies the port-mirroring-destination port on the switch.

direction — Specifies the interface is forced to MDIX mode. Choose from the following options:

- both — Mirror traffic in both directions.
- receive — Mirror received traffic.
- transmit — Mirror transmitted traffic.

Description

Use the MIRROR INTERFACE DIRECTION command to create a port mirror and specify the direction of the port mirroring. You can only specify one active port at a time.

To turn off port mirroring, use the no command.

Command Mode

Interface mode

Examples

The following commands set port 19 to receive port mirroring traffic from port 20:

```
switch#configure terminal

switch(config)#interface ge20

switch(config-if)#mirror interface ge19 direction
receive
```

The following commands turn off port mirroring on port 20:

```
switch#configure terminal

switch(config)#interface ge20

switch(config-if)#no mirror interface ge19 direction
receive
```

Related Commands

“SHOW RUNNING-CONFIG” on page 96

MTU

Syntax

```
mtu <64-9216>
```

Parameters

none

Description

Use the MTU command to set the MTU value for the specified interface. Choose a value between 64 and 9,216.

Command Mode

Interface mode

Example

The following commands set port 22 with an MTU value of 1700:

```
switch#configure terminal

switch(config)#interface ge22

switch(config-if)#mtu 1700
```

Related Commands

"SHOW RUNNING-CONFIG INTERFACE" on page 122

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
```

Parameters

INTERFACE — Indicates the interface or a list of interfaces. An interface list can consist of a port.

Note
Do not mix interface types in a list. Also, the specified interfaces must exist.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of one or more interfaces on the device.

Command Mode

All modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4:

```
switch#show running-config interface ge4
```

See Figure 21 for an example display.

```
(switch3)# show running-config interface ge4
!
interface ge4
     static channel-group 3
```

Figure 21. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of a switch for VLAN 2:

```
switch#show running-config interface vlan2
```

See Figure 21 for an example display.

```
(switch3)# show running-config interface vlan2
!
interface vlan2
!
```

Figure 22. SHOW RUNNING-CONFIG INTERFACE VLAN Example

Related Commands

"SHOW RUNNING-CONFIG" on page 96

SHUTDOWN

Syntax

```
shutdown
```

Parameters

none

Description

Use the SHUTDOWN command to shut down the specified interface.

Use the no form of this command to restore or reactivate an interface connection with the specified interface.

Command Mode

Interface Configuration mode

Example

The following commands shutdown interface 23:

```
switch#configure terminal
switch(config)#interface ge23
switch(config-if)#shutdown
```

Related Commands

none

SPEED

Syntax

```
speed
10000mfull|1000mfull|100mfull|100mhalf|100fx|10mfull|
10mhalf|auto
```

no speed

Parameters

10000mfull	Specifies the interface is forced to operate at a speed of 10,000 Mbps in full duplex mode.
1000mfull	Specifies the interface is forced to operate at a speed of 1,000 Mbps in full duplex mode.
100mfull	Specifies the interface is forced to operate at a speed of 100 Mbps in full duplex mode.
100mhalf	Specifies the interface is forced to operate at a speed of 100 Mbps in half duplex mode.
100fx	Specifies the interface is forced to operate at a speed of 100FX on an uplink port (ports 25 through 28) that is connected to an SFP transceiver. This speed is available in full duplex mode only.
10mfull	Specifies the interface is forced to operate at a speed of 10 Mbps in full duplex mode.
10mhalf	Specifies the interface is forced to operate at a speed of 10 Mbps in half duplex mode.
auto	Enables auto speed and duplex configuration.

Description

Use the SPEED command to set the speed and duplex mode for each port on the switch. For ports ge24 through ge28, you need to manually set the port speed to 100FX when you insert an SFP into these ports.

Use the no form of this command to remove the interface speed.

Note
To display the current port speeds, use the SHOW INTERFACE command. See "SHOW INTERFACE" on page 39.

Note
For more information about the AT-9000 switch and its ports, see the *AT-9000/28 9000 Series Managed Layer 2 GE ecoSwitch Installation Guide*.

Command Mode

Interface Configuration mode

Examples

The following commands set port 5 to 1,000Mbps in full-duplex mode:

```
switch#configure terminal
switch(config)#interface ge5
switch(config-if)#speed 1000mfull
```

The following commands set port 24 to 100FX in full-duplex mode:

```
switch#configure terminal
switch(config)#interface ge24
switch(config-if)#speed 100fx
```

Related Commands

“SHOW INTERFACE” on page 39

STATIC-CHANNEL-GROUP

Syntax

```
static-channel-group <1-8>
```

no `static-channel-group`

Parameters

<1-8> Specifies the static-channel-group number.

Description

Use the STATIC-CHANNEL-GROUP command to create a static-channel group.

Use the no form of this command to remove a static-channel group.

Command Mode

Interface Configuration mode

Example

The following commands create channel group 2 on port 8:

```
switch#configure terminal
switch(config)#interface ge8
switch(config-if)#static-channel-group 2
```

Related Commands

"SHOW STATIC-CHANNEL-GROUP" on page 57

STORM-CONTROL

Syntax

```
storm-control broadcast|dlf|multicast LEVEL <1-100>

no storm-control broadcast|dlf|multicast
```

Parameters

broadcast	Sets the broadcast rate limiting value for the interface.
dlf	Sets the destination lookup failure (DLF) for the interface.
multicast	Sets the multicast rate limiting value for the interface.
LEVEL	Specifies the percentage of the threshold or the percentage of the maximum speed (pps) of the interface. Enter a value between 1 and 100.

Description

Use the STORM-CONTROL command to specify the rising threshold level for broadcasting, multicast, or destination-lookup-failure traffic. The storm control action occurs when traffic reaches the level specified with the LEVEL parameter. By default, storm control is disabled.

Flooding techniques are used to block the forwarding of unnecessary flooded traffic. A packet storm occurs when a large number of broadcast packets are received on an interface. Forwarding these packets can cause the network to slow down or timeout.

Use the no form of this command to disable storm control.

Command Mode

Interface Configuration mode

Example

The following commands set the broadcast rate to 30% on port 4:

```
switch#configure terminal

switch(config)#interface ge4

switch(config-if)#storm-control broadcast level 30
```

Related Commands

none

SWITCHPORT ACCESS VLAN

Syntax

```
switchport access vlan VLANID <2-4094>

no switchport access vlan VLANID <2-4094>
```

Parameters

VLANID Specifies a VLAN ID. Enter a value from 2 to 4094.

Description

Use the SWITCHPORT ACCESS VLAN command to change the default VLAN for an interface. By default, all ports are assigned to VLAN 1. Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.

Caution
Before you enter the SWITCHPORT ACCESS VLAN command, you must configure a VLAN using the VLAN command.

Note
The default VLAN ID is 1. Do not use a VLAN ID of 1 due to interoperability issues.

Command Mode

Interface Configuration mode

Example

The following commands set the default VLAN to 3 on port 6:

```
switch#configure terminal

switch(config)#interface ge6

switch(config-if)#switchport access vlan 3
```

Related Commands

“SHOW VLAN ALL” on page 193

SWITCHPORT MODE TRUNK

Syntax

```
switchport mode trunk ingress-filter enable|disable

no switchport mode
```

Parameters

ingress-filter — Sets the ingress filtering for the received frames. Choose from the following options:

- enable — Sets the ingress filtering for received frames. Received frames that cannot be classified in the previous step based on the acceptable frame type parameter (access/trunk) are discarded.
- disable — Turns off ingress filtering to accept frames that do not meet the classification criteria. This is the default value.

Description

Use the SWITCHPORT MODE TRUNK command to set the switching characteristics of the Layer-2 interface to trunk mode and specify tagged frames only. Received frames are classified based on the VLAN characteristics. Then they are accepted or discarded based on the specified filtering criteria.

Use the no form of this command to reset the mode of the Layer-2 interface to the default value which is ingress filtering is off and all frame types are classified and accepted.

Command Mode

Interface mode

Example

The following commands enable ingress filtering for received frames:

```
switch#configure terminal

switch(config)#interface ge5

switch(config-if)#switchport mode trunk ingress-filter
enable
```

Related Commands

none

SWITCHPORT PORT-SECURITY MAXIMUM

Syntax

```
switchport port-security maximum <1-320>

no switchport port-security maximum <1-320>
```

Parameters

maximum — Sets the maximum number of MAC addresses that can be accepted by the port. Choose a value between 1 and 320.

Description

Use the SWITCHPORT PORT-SECURITY MAXIMUM command to set the maximum number of secure MAC addresses that can be learned by the specified port.

Use the no form of this command to remove maximum the port-security setting.

To display the current port security settings, use the "SHOW RUNNING-CONFIG INTERFACE" on page 103.

Command Mode

Interface Configuration mode

Example

The following commands set the maximum number of secure addresses learned on port 15 to 40:

```
switch#configure terminal

switch(config)#interface ge15

switch(config-if)#switchport port-security maximum 40
```

Related Commands

"SWITCHPORT PORT-SECURITY MODE" on page 134

"SWITCHPORT TRUNK ALLOWED VLAN" on page 136

SWITCHPORT PORT-SECURITY MODE

Syntax

```
switchport port-security mode limited|locked|secured
```

Parameters

mode Sets the security mode. Choose from the following options:

- limited — Sets the port to the Limited security mode. The port learns a limited number of dynamic MAC addresses. This is the least secure option.
- locked — Sets the switch to the Locked security mode. The port stops learning new dynamic MAC addresses. The port forwards frames based on static MAC addresses and on those dynamic addresses it has already learned.
- secured — Sets the port to the Secured security mode. The port accepts frames based only on static MAC addresses. You must enter the static MAC addresses of the nodes with frames the port is to accept after you have activated this security mode on a port. To add static MAC addresses, use the SWITCH-PORT PORT-SECURITY MAC-ADDRESS command.

Description

Use the SWITCHPORT PORT-SECURITY MODE command to set a port's security mode. Only one mode can be active on a port at a time. By default, no port-security mode is configured on an interface.

To display the current port security settings, use the "SHOW RUNNING-CONFIG INTERFACE" on page 103.

Command Mode

Interface Configuration mode

Example

The following commands set the security mode to "locked" on port 20:

```
switch#configure terminal
```

```
switch(config)#interface ge20
switch(config-if)#switchport port-security mode locked
```

Related Commands

"SWITCHPORT PORT-SECURITY MAXIMUM" on page 133

"SWITCHPORT TRUNK ALLOWED VLAN" on page 136

SWITCHPORT TRUNK ALLOWED VLAN

Syntax

```
switchport trunk allowed vlan add|remove VLANID
```

```
no switchport trunk vlan
```

Parameters

add — Add a VLAN to transmit and receive through the Layer-2 interface.

remove — Remove a VLAN that transmits and receives through the Layer-2 interface.

VLANID — Specifies a VLAN ID or a list of VLAN IDs. Enter a value from 2 to 4094. Set a single VLAN, VLAN range, or a VLAN list.

For a VLAN range, specify the lowest VLAN, then the highest VLAN number in the range, and separate them with a hyphen.

For a VLAN list, specify VLAN numbers separated by commas.

Note
Do not enter spaces between hyphens or commas when setting parameters for VLAN ranges or lists.

Description

Use the SWITCHPORT TRUNK ALLOWED VLAN command to change the default VLAN for an interface. Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.

Command Mode

Interface Configuration mode

Examples

The following commands add a single VLAN, VLAN 2, to the member set of port 6:

```
switch#configure terminal
```

```
switch(config)#interface ge6
```

```
switch(config-if)#switchport mode trunk

switch(config-if)#switchport trunk allowed vlan add 2
```

The following commands add VLANs 2 through 6 to the member set of port 7:

```
switch#configure terminal

switch(config)#interface ge7

switch(config-if)#switchport mode trunk

switch(config-if)#switchport trunk allowed vlan add 2-
6
```

The following commands remove a list of VLANs from port 5:

```
switch#configure terminal

switch(config)#interface ge5

switch(config-if)#switchport mode trunk

switch(config-if)#switchport trunk allowed vlan remove
```

Related Commands

"SHOW VLAN ALL" on page 193

"SWITCHPORT MODE TRUNK" on page 131

TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES

Syntax

```
traffic-class-table user-priority <0-7> num-traffic-
classes <0-8> value <0-2?>
```

Parameters

user-priority	Indicates the user priority associated with the traffic class table. Choose a value between 0 and 7.
num-traffic-classes	Indicates the number of supported traffic classes. Choose a value between 0 and 8.
value	Indicates the value that is used for the given user-priority and num-traffic classes.

Description

Use the TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES command to specify how the incoming 802.1p priority market packets are mapped to the internal Class of Service queues. Also, it allows you to display the number of queues per port.

To display the current port security settings, use the “SHOW RUNNING-CONFIG INTERFACE” on page 103.

Command Mode

Interface Configuration mode

Example

The following commands set port 3 with a user priority of 7, a traffic class value of 7, and a value of 2:

```
switch#configure terminal

switch(config)#interface ge3

switch(config-if)#traffic-class-table user-priority 7
num-traffic classes 7 value 2
```

Related Commands

none

USER-PRIORITY

Syntax

```
user-priority <0-7>
```

Parameters

none

Description

Use the USER-PRIORITY command to indicate a priority for the port specified.

A tagged Ethernet frame contains a field that specifies its VLAN membership. Such frames also contain a user priority level used by the switch to determine the Quality of Service to apply to the frame and which egress queue on the egress port a packet should be stored in. The three bit binary number represents eight priority levels, 0 to 7, with 0 the lowest priority and 7 the highest. By default, this command is set to 0 on all ports.

Command Mode

Interface mode

Example

The following commands assign a user priority of 7 to port 16:

```
switch#configure terminal

switch(config)#interface ge16

switch(config-if)#user-priority 7
```

Related Commands

"MLS QOS" on page 87

"USERNAME" on page 105

Section II

Advanced Configuration

The chapters in this section provide information about configuring advanced features:

- Chapter 5, “802.1x Access Control Commands” on page 143
- Chapter 6, “GVRP Commands” on page 155
- Chapter 7, “Simple Network Management Protocol (SNMP) Commands” on page 163
- Chapter 8, “Spanning Tree Protocol (STP) Commands” on page 179
- Chapter 9, “Virtual Local Area Networks (VLAN) Commands” on page 191

Chapter 5

802.1x Access Control Commands

The switch implements the server side of the IEEE 802.1x Port-based and MAC-based Network Access Control. This feature allows only authorized users, or their network devices, access to network resources by establishing criteria for each interface on the switch.

This chapter contains the following commands:

- “DOT1X SYSTEM-AUTH-CTRL” on page 144
- “LOGIN REMOTELOCAL” on page 145
- “RADIUS-SERVER HOST” on page 146
- “RADIUS-SERVER KEY” on page 147
- “SHOW DOT1X” on page 148
- “SHOW DOT1X ALL” on page 149
- “SHOW DOT1X INTERFACE” on page 152
- “SHOW DOT1X STATISTICS INTERFACE” on page 154

DOT1X SYSTEM-AUTH-CTRL

Syntax

```
dot1x system-auth-ctrl
```

Parameters

system-auth-ctrl Enable global interface authentication.

Description

Use the DOT1X SYSTEM-AUTH-CTRL command to enable authentication globally on interfaces 1 through 28. Global authentication is disabled by default.

Command Mode

Configuration Terminal mode

Example

The following commands enable 802.1x Port Based Access Control on all interfaces:

```
switch#configure terminal

switch(config)#dot1x system-auth-ctrl
```

Related Commands

“SHOW DOT1X ALL” on page 149

LOGIN REMOTELOCAL

Syntax

```
login remotelocal
```

```
no login
```

Parameters

none

Description

Use the LOGIN REMOTELOCAL command to enable password checking on the RADIUS server. To disable password checking, use the no form of the command.

Command Mode

Line mode

Example

The following commands enable password checking on a RADIUS server with an IP address of 192.168.1.30 and a key of "ATI:"

```
switch# configure terminal
```

```
switch(config)# radius-server host 192.168.1.30 auth-
port 1812
```

```
switch(config)# radius-server key ATI
```

```
switch(config)# line console 0
```

```
switch(config-line)# login remotelocal
```

Related Commands

"LINE CONSOLE" on page 81

"RADIUS-SERVER HOST" on page 146

"RADIUS-SERVER KEY" on page 147

RADIUS-SERVER HOST

Syntax

```
radius-server host HOSTNAME auth-port=port|ALL <1-
1812>)

no radius-server host
```

Parameters

hostname	Sets the radius server to an IP address in the following format: xxx.xxx.xxx
auth-port	Specifies the port number of the radius client. The default port number is 1812. The range is from 1 to 1812.

Description

Use the RADIUS-SERVER HOST command to set the RADIUS server host name and port.

Use the no form of this command to remove the defined host and port from the list of RADIUS servers. If you do not specify a value for the port, the default value of 1812 is used automatically.

Command Mode

Configure mode

Example

The following commands assign an IP address of 192.126.12.1 to the radius-server host:

```
switch# configure terminal

switch(config)# radius-server host 192.126.12.1
```

Related Commands

none

RADIUS-SERVER KEY

Syntax

```
radius-server key KEY

no radius-server key KEY
```

Parameters

KEY — The secret key shared among the radius server and the 802.1x client. Enter a value between x and y. Special characters such as "*," "_," and "!" are permitted.

Description

Use the RADIUS-SERVER KEY command to set the shared secret key between a Radius server and a client. This command has no default value.

To erase the current value of the secret key, use the no form of this command.

Command Mode

Configure mode

Example

The following commands set the shared secret key to "ipi:"

```
switch# configure terminal

switch(config)# radius-server key ipi
```

Related Commands

"RADIUS-SERVER HOST" on page 146

SHOW DOT1X

Syntax

show dot1x

Parameters

none

Description

Use this command to display the status of the 802.1x feature on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW DOT1X command and the resulting display:

```
switch#show dot1x
```

See Figure 23 for a sample display.

```
switch# show dot1x
% 802.1x authentication enabled
% Raduis server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
```

Figure 23. SHOW DOT1X Command

Related Commands

“SHOW DOT1X ALL” on page 149

“SHOW DOT1X INTERFACE” on page 152

SHOW DOT1X ALL

Syntax

show dot1x all

Parameters

none

Description

Use this command to display detailed 802.1x information about all of the interfaces. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW DOT1X ALL command and the resulting display in Figure 24:

```
switch# show dot1x all
```

```
(switch3)#show dot1x all
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
% Dot1x info for interface eth1 - 3
% portEnabled: true - portControl: auto
% portStatus: unauthorized - currentId: 11
% reAuthenticate: disabled
% abort:F fail:F start:F timeout:F success:F
% PAE: state: connecting - portMode: auto
% PAE: reAuthCount: 2 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
% BE: state: idle - reqCount: 0 - idFromServer: 0
% BE: suppTimeout: 30 - serverTimeout: 30 - maxReq: 2
% CD: adminControlledDirections: in - operControlledDirections: in
% CD: bridgeDetected: false
% KR: rxKey: false
% KT: keyAvailable: false - keyTxEnabled: false
```

Figure 24. SHOW DOT1X ALL Command

Table 7 provides a description of the parameters of the SHOW DOT1X ALL and SHOW DOT1X INTERFACE commands.

Table 7. SHOW DOT1X Parameter Description

Parameter	Description
portEnabled	Indicates the interface operational status (up-true/down-false).
portControl	Indicates the current control status of the port for 802.1x control.
portStatus	Indicates the 802.1x status of the port (authorized or unauthorized).
reAuthenticate	Indicates the status of reauthentication on an interface.
reAuthPeriod	Indicates the time period of reauthentication.
Supplicant PAE related global variables:	
abort	Indicates that authentication should be aborted when this variable is set to true.
fail	Indicates failed authentication attempt when this variable is set to false.
start	Indicates authentication should be started when this variable is set to true.
timeout	Indicates an authentication attempt timed out when this variable is set to true.
success	Indicates authentication is successful when this variable is set to true.
PAE: state Current 802.1x operational state of the interface	
mode	Indicates the mode is set to 802.1x.
reAuthMax	Indicates the maximum number of reauthentication attempts.
BE Backend Authentication state	
state	Indicates the status of the state machine.
reqCount	Indicates the number of requests sent to the server.
suppTimeout	Indicates the supplicant timeout period.
serverTimeout	Indicates the server timeout period.

Table 7. SHOW DOT1X Parameter Description (Continued)

Parameter	Description
maxReq	Specifies the maximum number of requests that can be sent.
CD	Specifies the Controlled Directions State machine.
adminControlledDirections	Indicates the administrative value (Both/In).
operControlledDirections	Indicates the operational Value (Both/In).
KR	Specifies the key receive state machine.
rxKey	Indicates true when EAPOL-Key message is received by supplicant or authenticator. Indicates false when a key is transmitted.
KT	Specifies the Key Transmit State machine.
keyAvailable	Indicates false when key has been transmitted by authenticator. Indicates true when a new key is available for key exchange.
keyTxEnabled	Indicates the key transmission status.

Related Commands

"SHOW DOT1X INTERFACE" on page 152

SHOW DOT1X INTERFACE

Syntax

```
show dot1x interface IFNAME
```

Parameters

IFNAME — Indicates the name of the interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with “ge.”

Description

Use this command to display the state of a particular interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following command displays the state of interface 6.

```
switch# show dot1x interface xe6
```

See Figure 25 for a sample display.

```
(switch3)#show dot1x interface
% 802.1X info for interface xe6
% portEnabled: true - portControl: Force Unauthorized
% portStatus: Unauthorized - currentId: 2
% reAuthenticate: disabled
%  reAuthPeriod: 3600
%  abort:F fail:F start:F timeout:F success:F
% PAE: state: Force Unauthorized - portMode: Force Unauthorized
% PAE: reAuthCount: 1 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
BE: state: Idle - reqCount: 0 - idFromServer: 0
BE: suppTimeout: 30 - serverTimeout: 30 - maxReq: 2
CD: adminControlledDirections: in - operControlledDirections: in
CD: bridgeDetected: false
KR: rxKey: false
KT: keyAvailable: false - keyTxEnabled: falseExample
```

Figure 25. SHOW DOT1X INTERFACE Command

See Table 7 on page 150 for a description of the command parameters shown in Figure 25 on page 152.

Related Commands

"SHOW DOT1X ALL" on page 149

SHOW DOT1X STATISTICS INTERFACE

Syntax

show dot1x statistics interface IFNAME

Parameters

IFNAME — Specifies the name of the interface. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW DOT1X STATISTICS INTERFACE command to display the vital statistics of an interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following command displays the statistics for interface 5:

```
switch# show dot1x statistics interface xe5
```

See Figure 26 for a sample display.

```
(switch3)#show dot1x interface
% Dot1x statistics for interface xe5 - 3
% EAPOL Frames Rx: 0 - EAPOL Frames Tx: 0
% EAPOL Start Frames Rx: 0 - EAPOL Logoff Frames Rx: 0
% EAP Rsp/Id Frames Rx: 0 - EAP Response Frames Rx: 0
% EAP Req/Id Frames Tx: 35 - EAP Request Frames Tx: 0
% Invalid EAPOL Frames Rx: 0 - EAP Length Error Frames Rx: 0
% EAPOL Last Frame Version Rx: 0 - EAPOL Last Frame Src:
0000.0000.0000
```

Figure 26. SHOW DOT1X INTERFACE Command

Related Commands

“SHOW DOT1X” on page 148

Chapter 6

GVRP Commands

The GARP VLAN Registration Protocol (GVRP) allows network devices to share VLAN information. The main purpose of GVRP is to allow switches to automatically discover some of the VLAN information that would otherwise need to be manually configured in each switch. This is helpful in networks where VLANs span more than one switch. Without GVRP, you must manually configure your switches to ensure that the various parts of a VLAN can communicate across the different switches. GVRP, which is an application of the Generic Attribute Registration Protocol (GARP), does this for you automatically.

This chapter contains the following commands:

- ❒ “SET GVRP” on page 156
- ❒ “SET GVRP APPLICANT” on page 157
- ❒ “SET GVRP DYNAMIC-VLAN-CREATION” on page 158
- ❒ “SET GVRP REGISTRATION” on page 159
- ❒ “SET GVRP TIMER” on page 161

Note
For information about VLAN commands, see Chapter 9, “Virtual Local Area Networks (VLAN) Commands” on page 191.

SET GVRP

Syntax

```
set gvrp enable|disable
```

Parameters

enable	Enables GVRP on the switch.
disable	Disables GVRP on the switch.

Description

This command enables or disables GVRP globally on the switch. When GVRP is enabled, the switch learns GVRP VLANs and GVRP ports dynamically.

When GVRP is disabled, the switch does not learn any new dynamic GVRP VLANs or dynamic GVRP ports.

Command Mode

Configuration Terminal mode

Examples

The following commands enable GVRP on the switch:

```
switch#configure terminal
switch(config)#set gvrp enable
```

The following commands disable GVRP on the switch:

```
switch#configure terminal
switch(config)#set gvrp disable
```

Related Commands

“SET GVRP APPLICANT” on page 157

“SET GVRP DYNAMIC-VLAN-CREATION” on page 158

“SET GVRP REGISTRATION” on page 159

“SET GVRP TIMER” on page 161

SET GVRP APPLICANT

Syntax

```
set gvrp applicant state active|normal ge<1-28>
```

Parameters

active	Indicates the active state. The port participates in GVRP. The port processes GVRP information and transmits PDUs.
normal	Indicates the normal state.The port does not participate in GVRP. The port neither processes GVRP information nor transmits PDUs.
ge<1-28>	Specifies a port number. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

The GVRP APPLICANT command sets the GID applicant state on a port to active or normal.

Command Mode

Configuration Terminal mode

Examples

The following commands set the GID applicant on port 5 to an active state:

```
switch#configure terminal

switch(config)#set gvrp applicant state active ge5
```

Related Commands

"SET GVRP" on page 156

"SET GVRP DYNAMIC-VLAN-CREATION" on page 158

"SET GVRP REGISTRATION" on page 159

"SET GVRP TIMER" on page 161

SET GVRP DYNAMIC-VLAN-CREATION

Syntax

```
set gvrp dynamic-vlan-creation
```

Parameters

none

Description

The GVRP APPLICANT command enables dynamic VLANs to be created on the switch.

Command Mode

Configuration Terminal mode

Example

The following commands allow GVRP VLANs to be created dynamically:

```
switch#configure terminal
switch(config)#set gvrp dynamic-vlan-creation
```

Related Commands

“SET GVRP” on page 156

“SET GVRP APPLICANT” on page 157

“SET GVRP REGISTRATION” on page 159

“SET GVRP TIMER” on page 161

SET GVRP REGISTRATION

Syntax

```
set gvrp registration fixed|forbidden|normal ge<1-28>
```

Parameters

fixed	Allows manual creation and registration of VLANs and prevents VLAN deregistration. Also registers all know VLANs on other port on the tagged port.
forbidden	Unregisters all VLANs (except VLAN 1) and prevents any further VLAN creation or registration on the tagged port.
normal	Allows dynamic creation (if dynamic VLAN creation is enabled), registration, and deregistration of VLANs on the tagged port. This is the default value.
ge<1-28>	Specifies a port. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GVRP REGISTRATION command to set GVRP registration to fixed, forbidden, or normal on an interface.

Command Mode

Configuration Terminal mode

Examples

The following commands set GVRP registration to fixed on port 9:

```
switch#configure terminal

switch(config)#set gvrp registration fixed ge9
```

The following commands set GVRP registration to forbidden on port 15:

```
switch#configure terminal

switch(config)#set gvrp registration forbidden ge15
```

Related Commands

“SET GVRP” on page 156

“SET GVRP APPLICANT” on page 157

“SET GVRP DYNAMIC-VLAN-CREATION” on page 158

“SET GVRP TIMER” on page 161

SET GVRP TIMER

Syntax

```
set gvrp timer join|leave|leaveall <1-65535> ge<1-28>
```

Parameters

default	Returns the GARP timers to their default settings.
join	Specifies the Join timer for joining the group. Enter a value in centiseconds, which are one hundredths of a second. The default is 20 centiseconds.
leave	Specifies the Leave timer for leaving a group. Enter a value in centiseconds, which are one hundredths of a second. The default is 60 centiseconds.
leaveall	Specifies the LeaveAll timer for leaving all groups. Enter a value in centiseconds, which are one hundredths of a second. The default is 1,000 centiseconds.
<1-65535>	Specifies the timer value in hundredths of a second. Enter a value between 1 and 65,535.
ge<1-28>	Specifies a port. There are 28 ports on the 9000/28 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GVRP TIMER command to set the GARP timers.

Note
You must make the settings for these timers the same on all GVRP-active network devices.

Examples

The following command sets the Join timer to 0.1 second for all GVRP applications on port 8:

```
switch#configure terminal

switch(config)#set gvrp timer join 10 ge8
```

The following command sets the leave timer to 0.5 second for all GVRP applications on port 9:

```
switch#configure terminal

switch(config)#set gvrp timer leave 50 seconds ge9
```

Related Commands

“SET GVRP” on page 156

“SET GVRP APPLICANT” on page 157

“SET GVRP DYNAMIC-VLAN-CREATION” on page 158

“SET GVRP REGISTRATION” on page 159

Chapter 7

Simple Network Management Protocol (SNMP) Commands

This chapter provides descriptions of SNMP v1 and v2c commands that are accessed through the Configuration Terminal mode.

This chapter contains the following commands:

- “SNMP-SERVER COMMUNITY” on page 164
- “SNMP-SERVER CONTACT” on page 166
- “SNMP-SERVER ENABLE” on page 168
- “SNMP-SERVER GROUP” on page 169
- “SNMP-SERVER HOST” on page 171
- “SNMP-SERVER USER” on page 173
- “SNMP-SERVER USER REMOTE” on page 175
- “SNMP-SERVER VIEW” on page 177

SNMP-SERVER COMMUNITY

Syntax

```
snmp-server community STRING view VIEWNAME ro|rw|view

no snmp-server community
```

Parameters

STRING	Specifies the name of the SNMP community. Choose an alphanumeric value between 1 and 255 characters. This name acts as a password and permits access to SNMP.
VIEWNAME	Indicates the name of a view that was defined with the SNMP-SERVER VIEW command. Choose from the following options:
	ro — Specifies the view is read-only access.
	rw — Specifies the view is read-write access.
	view — Specifies the MIB view.

Description

Use the SNMP-SERVER COMMUNITY command to set the name, view, and access of an SNMP community.

Use the no form of this command to remove a community string.

Command Mode

Configuration Terminal mode

Example

The following commands sets the name of the SNMP community to “engineering 78” and the view to read-write access:

```
switch#configure terminal

switch#(config)#snmp-server community “engineering 78” rw
```

Related Commands

"SNMP-SERVER GROUP" on page 169

"SNMP-SERVER VIEW" on page 177

SNMP-SERVER CONTACT

Syntax

```
snmp-server contact LINE

no snmp-server contact
```

Parameters

LINE	Specifies an alphanumeric string including spaces. You do not have to use quotation marks to indicate spaces. Choose a value that is between 1 and 255 characters in length.

Description

Use the SNMP-SERVER CONTACT command to set a contact person, email address, or IP address for the SNMP system. To remove a contact from the SNMP server, use the no form of this command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the SNMP server contact to info@alliedtelesis.com:

```
switch#configure terminal

switch#(config)#snmp-server contact
info@alliedtelesis.com
```

The following commands set the SNMP server contact to “Todd Marcus:”

```
switch#configure terminal

switch#(config)#snmp-server contact Todd Marcus
```

The following commands set the SNMP server contact to IP address 192.34.12.4:

```
switch#configure terminal

switch#(config)#snmp-server contact 192.34.12.4
```

Related Commands

"SNMP-SERVER USER" on page 173

SNMP-SERVER ENABLE

Syntax

```
snmp-server enable

no snmp-server enable
```

Parameters

none

Description

Use the SNMP-SERVER ENABLE command to enable SNMP link and failure traps on the switch. Use the no form of this command to disable SNMP link and failure traps.

Command Mode

Configuration Terminal mode

Example

The following commands enable an SNMP agent on the switch:

```
switch#configure terminal

switch(config)#snmp-server enable
```

Related Commands

“SNMP-SERVER COMMUNITY” on page 164

SNMP-SERVER GROUP

Syntax

```
snmp-server group GROUPNAME v1|v2c auth|noauth|priv
|read[VIEWNAME]|write[VIEWNAME]|notify[VIEWNAME]

no snmp-server group GROUPNAME v1|v2c
```

Parameters

GROUPNAME — Specifies the group name. Choose an alphanumeric value between 1 and 255 characters.

v1 — Specifies a group that uses the SNMPv1 security mode.

v2c — Specifies a group that uses the SNMPv2c security mode.

read — Specifies the view that permits the user read access.

- VIEWNAME — Indicates a name of a view defined with the SNMP-SERVER VIEW command.

write — Specifies the view that the user is allowed to read and write.

- VIEWNAME — Indicates a name of a view defined with the SNMP-SERVER VIEW command.

notify — Specifies the view that permits a user to be notified.

- VIEWNAME — Indicates a name of a view defined with the SNMP-SERVER VIEW command.

Description

Use the SNMP-SERVER GROUP command to define the access rights for an SNMP group that you created with the SNMP-SERVER USER command. The SNMP-SERVER GROUP command assigns a security model and a security level to a group.

Use the no form of this command to remove an SNMP group.

Command Mode

Configuration Terminal mode

Examples

The following commands create an SNMPv1 group named “marcom” with write access to a view called “internet”:

```
switch#configure terminal

switch(config)#snmp-server group marcom v1 write
1.3.6.1
```

The following commands create an SNMPv1 group named “group1” with access to a view called “nview” with notify permission:

```
switch#configure terminal

switch(config)#snmp-server group group1 v1 notify
nview
```

The following commands create an SNMPv2c group named “group2” with access to a view called “wview” with write permission and a view called “nview” with notify permission:

```
switch#configure terminal

switch(config)#snmp-server group group2 v2c write
wview notify nview
```

Related Commands

“SNMP-SERVER USER” on page 173

“SNMP-SERVER VIEW” on page 177

SNMP-SERVER HOST

Syntax

```
snmp-server host A.B.C.D informs|traps version 1|2c
COMMUNITY-STRING

no snmp-server host A.B.C.D informs|traps version 1|2c
COMMUNITY-STRING
```

Parameters

A.B.C.D	Specifies the name or the Internet address of the host.
inform	Sends SNMP inform messages to the host specified.
traps	Sends SNMP traps to the host specified.
version	Specifies the SNMP version used to send the traps. Choose from the following: 1 Indicates SNMPv1 traps. 2c Indicates SNMPv2c traps.
COMMUNITY-STRING	Specifies the password community string that is sent with the notification operation. There is no default for this parameter.

Description

Use the SNMP-SERVER HOST command to create an SNMP v1 or v2c host which is the recipient of SNMP notifications. In addition, you define which SNMP mode (v1 or v2c) the host is able to receive.

Use the no form of the command to remove one or more of the following:

- the specified host
- specific traps that the host can receive
- the community-string.

Command Mode

Configuration Terminal mode

Examples

The following commands create an SNMP v2c host with an IP address of 192.34.10.1, traps, and public notification:

```
switch#configure terminal

switch(config)#snmp-server host 192.34.10.1 traps
version 2c public
```

The following commands create an SNMP v1 host with an IP address of 192.34.10.1 that receives inform messages:

```
switch#configure terminal

switch(config)#snmp-server host 192.34.10.1 inform
version 1
```

Related Commands

“SNMP-SERVER COMMUNITY” on page 164

“SNMP-SERVER USER” on page 173

SNMP-SERVER USER

Syntax

```
snmp-server user USERNAME GROUPNAME remote HOST
udpport <1-65536> v1|v2 auth(md5|sha) auth-password

no snmp-server user USERNAME
```

Parameters

USERNAME	Specifies the name of the user.
GROUPNAME	Specifies the name of the SNMP group. The user listed in this command becomes a member of this group.
HOST	Specifies the IP address of the host that connects to the agent in the following format: xxx.xxx.xxx.xxx
udp-port	Specifies a UDP port value. Enter a value between 1 and 65536. The default value is 162.
v1	Specifies the SNMPv1 security mode.
v2c	Specifies the SNMPv2c security mode.
auth	Specifies authentication is used to verify the server. If you select this parameter, you must specify an auth-password. md5 Specifies the MD5 security mode. This is an optional parameter. sha Specifies the SHA security mode. This is an optional parameter.
auth-password	Specifies the SNMP authorization password.

Description

Use the SNMP-SERVER USER command to create an SNMP user, create an SNMP group, and assign the user to an SNMP group. In addition, the SNMP-SERVER USER command maps a security mode, authentication mode, and authorization password to a group name.

Use the no form of the SNMP-SERVER USER command to remove an SNMP user from a group.

Command Mode

Configuration Terminal mode

Examples

The following commands add a user named Marla to the group called ati3 which is an SNMPv2c group connected to a host with an IP address of 192.168.9.1. In addition, the UDP port assigned is 170, the security mode is MD5, and the authorization password is “funnybusiness14:”

```
switch#configure terminal

switch(config)#snmp-server user Marla ati3 remote
192.168.9.1 v2 udp-port 170 auth md5 funnybusiness14
```

The following commands remove a user named Xifan:

```
switch#configure terminal

switch(config)#no snmp-server user Xifan
```

Related Commands

“SNMP-SERVER GROUP” on page 169

SNMP-SERVER USER REMOTE

Syntax

```
snmp-server user remote GROUPNAME remote A.B.C.D udp-
port PORT<1-65535> encrypted auth(md5|sha) password
PASSWORD

no snmp-server user USERNAME
```

Parameters

GROUPNAME	Specifies the name of the SNMP group. The user listed in this command becomes a member of this group.
A.B.C.D	Specifies the IP address of the host that connects to the agent in the following format: xxx.xxx.xxx.xxx
PORT	Specifies the UDP port. Choose a value between 1 and 65,535. The default value is 162.
encrypted	Enables an encrypted password. This is an optional parameter.
auth	Specifies authentication is used to verify the server. If you select this parameter, you must specify the SNMP authorization password. md5 Specifies the MD5 security mode. This is an optional parameter. sha Specifies the SHA security mode. This is an optional parameter.
PASSWORD	Specifies the SNMP authorization password.

Description

Use the SNMP-SERVER USER command to create an SNMP user, create an SNMP group, and assign the user to an SNMP group. In addition, the SNMP-SERVER USER command maps a security mode and security name to a group name.

Use the no form of this command to remove an SNMP user from a group.

Command Mode

Configuration Terminal mode

Example

The following commands add a user named Shufen to an SNMPv2c group called ati3 which is connected to a host with an IP address of 192.168.10.1. A password defined as “super1password” is used as an authorization password:

```
switch#configure terminal

switch(config)#snmp-server user remote ati3
192.168.10.1 v2 auth SHA super1password
```

Related Commands

“SNMP-SERVER GROUP” on page 169

“SNMP-SERVER USER” on page 173

SNMP-SERVER VIEW

Syntax

```
snmp-server view VIEWNAME WORD include|exclude

no snmp-server view
```

Parameters

VIEWNAME	Specifies the name of the user.
WORD	Specifies the MIB Tree.
include	Includes users in this view.
exclude	Excludes users from this view.

Description

Use the SNMP-SERVER VIEW command to create an SNMP view and determine if a user can access it. The MIB tree is defined by RFC 1155 Structure of Management Information. You use object identifiers (OIDs) to specify MIB modules that are included or excluded in a view. After you create a view, you can map an SNMP group to it with the SNMP-SERVER GROUP command.

Use the no form of this command to remove an SNMP view.

Command Mode

Configuration Terminal mode

Examples

The following commands create a view called "Internet" and allows the users that are mapped to this Object Identifier (OID) to view the Internet:

```
switch#configure terminal

switch(config)#snmp-server view Internet 1.3.6.1
include
```

The following commands create a view called "sweng4" and excludes users that are mapped to this OID from viewing its contents:

```
switch#configure terminal

switch(config)#snmp-server view sweng4 1.3.6.1.4.1
exclude
```

Related Commands

“SNMP-SERVER GROUP” on page 169

Chapter 8

Spanning Tree Protocol (STP) Commands

The commands in this chapter can be used in the Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP) Protocol daemons. All of the spanning-tree commands are available in the Configuration Terminal mode.

This chapter contains the following commands:

- “SHOW SPANNING-TREE” on page 180
- “SPANNING-TREE ENABLE” on page 183
- “SPANNING-TREE FORWARD-TIME” on page 184
- “SPANNING-TREE HELLO-TIME” on page 185
- “SPANNING-TREE MAX-AGE” on page 186
- “SPANNING-TREE MODE” on page 187
- “SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT” on page 188
- “SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 189
- “SPANNING-TREE PRIORITY” on page 190

Note
To display the current spanning tree configuration, see “SHOW SPANNING-TREE” on page 55.

SHOW SPANNING-TREE

Syntax

```
show spanning-tree interface INTERFACE
```

Parameters

INTERFACE	Indicates the name of an interface.

Description

Use the SHOW SPANNING-TREE command to display the status of the active spanning tree protocol on the specified port.

Command Mode

Privileged Executive mode

Example

The following command displays the spanning tree configuration on port 1:

```
switch#show spanning-tree interface ge1
```

This command displays a variety of parameters. An example of page 1 of the display is shown in Figure 27.

```
(switch3)# show spanning-tree interface ge1
% 1: Bridge up - Spanning Tree Disabled
% 1: Root Path Cost 0 - Root Port 0 - Bridge Priority 32768
% 1: Forward Delay 15 - Hello Time 2 - Max Age 20
% 1: Root Id 80000012341212ab
% 1: Bridge Id 80000012341212ab
% 1: last topology change Sat Jan 1 00:00:18 2008
% 1: portfast bpdu-filter disabled
% 1: portfast bpdu-guard disabled
% 1: portfast errdisable timeout disabled
% 1: portfast errdisable timeout interval 300 sec
% 1:    ge1: Port 2001 - Id 87d1 - Role Disabled - State Fwd
% 1:    ge1: Designated Path Cost 0
% 1:    ge1: Configured Path Cost 200000 - Add type Explicit ref
count 1
% 1:    ge1: Designated Port Id 87d1 - Priority 128 -
% 1:    ge1: Root 80000012341212ab
% 1:    ge1: Designated Bridge 80000012341212ab
% 1:    ge1: Message Age 0 - Max Age 20
% 1:    ge1: Hello Time 2 - Forward Delay 15
% 1:    ge1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 -
topo change timer 0
% 1:    ge1: forward-transitions 2
% 1:    ge1: Version Rapid Spanning Tree Protocol - Received None
Send RSTP
--More--
```

Figure 27. SHOW SPANNING-TREE Command, page 1

See Figure 28 for page 2 of the display.

```
% 1:    ge1: No portfast configured - Current portfast off
% 1:    ge1: portfast bpdu-guard default - Current portfast bpdu-
guard off
% 1:    ge1: portfast bpdu-filter default - Current portfast bpdu-
guard off
% 1:    ge1: no root guard configured - Current root guard off
% 1:    ge1: Configured Link Type point-to-point - Current point-
to-point
%
(switch3)#
```

Figure 28. SHOW SPANNING-TREE Command, page 2

Related Commands

“SPANNING-TREE MODE” on page 187

SPANNING-TREE ENABLE

Syntax

```
spanning-tree stp|rstp enable

no spanning-tree stp|rstp enable
```

Parameters

stp	Specifies IEEE 801.Q Spanning-tree protocol (STP).
rstp	Specifies IEEE 801.w rapid Rapid Spanning-tree protocol (RSTP).
enable	Makes the current spanning tree protocol the active spanning-tree protocol.

Description

Use the SPANNING-TREE ENABLE command to enable STP or RSTP on the switch. After you have specified a spanning tree protocol, such as RSTP, all subsequent spanning tree commands in a login session apply to this spanning tree protocol. To make the spanning tree protocol the active spanning tree mode and enable it on the switch, use the SPANNING TREE MODE command.

Use the no form of this command to disable the spanning tree protocol on the switch.

Command Mode

Configuration Terminal mode

Example

The following commands enable RSTP on the switch:

```
switch#configure terminal

switch(config)#spanning-tree rstp enable
```

Related Commands

"SPANNING-TREE MODE" on page 187

SPANNING-TREE FORWARD-TIME

Syntax

```
spanning-tree forward-time <4-30>

no spanning-tree forward-time
```

Parameters

none

Description

Use the SPANNING-TREE FORWARD-TIME command to set the time, (in seconds), after which (if this bridge is the root bridge) each interface changes to the learning and forwarding states. This value is used by all instances. To restore the default value of 15 seconds, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands set the forward delay time to 20 seconds:

```
switch#configure terminal

switch(config)#spanning-tree forward-time 20
```

Related Commands

“SPANNING-TREE MAX-AGE” on page 186

SPANNING-TREE HELLO-TIME

Syntax

```
spanning-tree hello-time <1-10>

no spanning-tree hello-time
```

Parameters

none

Description

Use the SPANNING-TREE HELLO-TIME command to set the hello-time, the time in seconds after which (if this bridge is the root bridge) all the bridges in a bridged LAN exchange Bridge Protocol Data Units (BPDUs). A very low value of this command leads to excessive traffic on the network, while a higher value delays the detection of topology change. This value is used by all instances.

To restore the default value of the hello time, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands set the hello delay time to 9 seconds:

```
switch#configure terminal

switch(config)#spanning-tree hello-time 9
```

Related Commands

none

SPANNING-TREE MAX-AGE

Syntax

```
spanning-tree max-age <6-40>

no spanning-tree max-age
```

Parameters

none

Description

Use the SPANNING-TREE MAX-AGE command to set the max-age for a bridge. Max-age is the maximum time, in seconds, for which (if a bridge is the root bridge) a message is considered valid. This prevents the frames from looping indefinitely. This value is used by all instances.

Set the value of max-age to greater than twice the value of the hello time plus one, but less than twice the value of forward delay minus one. The allowable range for max-age is 6-40 seconds. The default value is 20 seconds.

Configure this value sufficiently high, so that a frame generated by root can be propagated to the leaf nodes without exceeding the max-age.

Use the no form of this command to restore the default value of max-age.

Command Mode

Configuration Terminal mode

Example

The following commands set the max-age time for the bridge to 10 seconds:

```
switch#configure terminal

switch(config)#spanning-tree max-age 10
```

Related Commands

“SPANNING-TREE FORWARD-TIME” on page 184

SPANNING-TREE MODE

Syntax

```
spanning-tree mode stp|rstp

no spanning-tree mode
```

Parameters

stp Specifies IEEE 801.Q Spanning-tree protocol (STP).

rstp Specifies IEEE 801.w rapid Rapid Spanning-tree protocol (RSTP).

Description

Use the SPANNING-TREE MODE command to specify the active Spanning Tree Protocol and enable it on the switch.

Command Mode

Configuration Terminal mode

Example

The following commands set the active spanning tree mode to RSTP and enables this mode on the switch:

```
switch#configure terminal

switch(config)#spanning-tree mode rstp
```

Related Commands

"SPANNING-TREE ENABLE" on page 183

SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT

Syntax

```
spanning-tree portfast bpdu-filter default

no spanning-tree portfast bpdu-filter default
```

Parameters

none

Description

Use the SPANNING-TREE BPDU-FILTER DEFAULT command to globally enable the BPDU filter on a bridge.

The Spanning Tree Protocol sends BPDUs from all interfaces. Enabling the BPDU filter ensures that portfast-enabled interfaces do not transmit or receive any BPDUs.

Use the no form of this command to disable the BPDU filter for the bridge.

Command Mode

Configuration Terminal mode

Example

The following commands enable the BPDU filter on a bridge:

```
switch#configure terminal

switch(config)#spanning-tree portfast bpdu-filter
default
```

Related Commands

“SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 189

SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT

Syntax

```
spanning-tree portfast bpdu-guard default

no spanning-tree portfast bpdu-guard default
```

Parameters

none

Description

Use the SPANNING-TREE BPDU-GUARD DEFAULT command to enable the BPDU (Bridge Protocol Data Unit) guard feature on a bridge. This command indicates the bridge level BPDU-Guard configuration takes effect.

When the BPDU guard feature is set for a bridge, all portfast-enabled interfaces of the bridge that have BPDU guard set to default shut down the interface on receiving a BPDU. In this case, the BPDU is not processed. You can bring the interface up manually by using the NO SHUTDOWN command.

Use the no form of the SPANNING-TREE BPDU-GUARD command to disable the BPDU-guard feature on a bridge.

Command Mode

Configuration Terminal mode

Example

The following commands enable the BPDU Guard feature on a bridge:

```
switch#configure terminal

switch(config)#spanning-tree portfast bpdu-guard
```

Related Commands

"SHUTDOWN" on page 124

"SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT" on page 188

SPANNING-TREE PRIORITY

Syntax

```
spanning-tree priority <0-61440>

no spanning-tree priority
```

Parameters

<0-61440>	Specifies the bridge priority value in increments of 4,096. For example, 4,096, 8,192, and 12,288 are all valid values.

Description

Use the SPANNING-TREE PRIORITY command to specify the interface priority. A lower priority value indicates a greater likelihood of becoming a root. The default value is 32,768.

The no form of this command resets the spanning-tree priority value to the default value which is 32,768.

Note
This command can be used for either STP or RSTP.

Command Mode

Configuration Terminal mode

Example

The following commands set the spanning-tree priority on the switch to 4,096:

```
switch#configure terminal

switch(config)#spanning-tree priority 4096
```

Related Commands

none

Chapter 9

Virtual Local Area Networks (VLAN) Commands

This chapter provides descriptions of VLAN commands that are accessed through the Configuration Terminal mode.

This chapter contains the following commands:

- ❒ “IP IGMP SNOOPING” on page 192
- ❒ “SHOW VLAN ALL” on page 193
- ❒ “SHOW VLAN BRIEF” on page 195
- ❒ “SHOW VLAN DYNAMIC” on page 197
- ❒ “SHOW VLAN STATIC” on page 198
- ❒ “SWITCHPORT TRUNK ALLOWED VLAN” on page 200
- ❒ “VLAN” on page 202
- ❒ “VLAN ACCESS-MAP” on page 203
- ❒ “VLAN DATABASE” on page 204

IP IGMP SNOOPING

Syntax

```
ip igmp snooping

no ip igmp snooping
```

Description

Use the IP IGMP SNOOPING command to enable IGMP Snooping on the switch or on a VLAN. When you enter this command at the Configuration Terminal mode, IGMP Snooping is enabled on the switch. When you enter this command at the VLAN Configuration mode, IGMP Snooping is enabled for the specified VLAN. By default, the IP IGMP Snooping feature is enabled.

Use the no parameter with this command to globally disable IGMP Snooping for the specified interface.

Command Mode

Configuration Terminal and VLAN Configuration modes

Examples

Use the following commands to enable IGMP Snooping on the switch:

```
switch#configure terminal

switch(config)#ip igmp snooping
```

Use the following commands to enable IGMP Snooping on the VLAN interface.

```
switch(config)#vlan database

switch(config-vlan)#ip igmp snooping
```

Related Commands

none

SHOW VLAN ALL

Syntax

```
show vlan all
```

Parameters

none

Description

Use the SHOW VLAN ALL command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW VLAN ALL command and a sample of the output:

```
switch3#show vlan all
```

See Figure 29 for an example display.

```
(switch3)# show vlan all
VLAN ID    Name        Type     State    Member ports
                                         (u)-Untagged, (t) Tagged
=======    =======     ======   ======   ========================
1          default     STATIC   ACTIVE   ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
                                         ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
                                         ge13(u) ge14(u) ge15(u) ge16(u)
                                         ge17(u) ge18(u) ge19(u) ge20(u)
                                         ge21(u) ge22(u) ge23(u) ge24(u)
                                         ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3          VLAN0003    STATIC   ACTIVE   ge5(u) ge7(t)
4          VLAN0004    STATIC   ACTIVE   ge7(t)
```

Figure 29. SHOW VLAN ALL

Related Commands

"SHOW MAC ADDRESS-TABLE VLAN" on page 51

"SHOW VLAN BRIEF" on page 195

“SHOW VLAN DYNAMIC” on page 197

“SHOW VLAN STATIC” on page 198

SHOW VLAN BRIEF

Syntax

```
show vlan brief
```

Parameters

none

Description

Use the SHOW VLAN BRIEF command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW VLAN BRIEF command and a sample of the output:

```
switch3#show vlan brief
```

See Figure 30 for an example display.

```
(switch3)# show vlan brief
VLAN ID    Name         Type      State     Member ports
                                             (u)-Untagged, (t) Tagged
=======    =======      ======    ======    ========================
1          default      STATIC    ACTIVE    ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
                                             ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
                                             ge13(u) ge14(u) ge15(u) ge16(u)
                                             ge17(u) ge18(u) ge19(u) ge20(u)
                                             ge21(u) ge22(u) ge23(u) ge24(u)
                                             ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3          VLAN0003     STATIC    ACTIVE    ge5(u) ge7(t)
4          VLAN0004     STATIC    ACTIVE    ge7(t)
```

Figure 30. SHOW VLAN BRIEF

Related Commands

“SHOW MAC ADDRESS-TABLE VLAN” on page 51

“SHOW VLAN ALL” on page 193

“SHOW VLAN BRIEF” on page 195

“SHOW VLAN DYNAMIC” on page 197

“SHOW VLAN STATIC” on page 198

SHOW VLAN DYNAMIC

Syntax

```
show vlan dynamic
```

Parameters

none

Description

Use the SHOW VLAN DYNAMIC command to display information about dynamic VLANs on the switch.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW VLAN DYNAMIC command and a sample of the output:

```
switch3#show vlan dynamic
```

See Figure 31 for an sample display.

```
(switch3)# show vlan dynamic
VLAN ID    Name         Type      State     Member ports
                                             (u)-Untagged, (t) Tagged
=======    =======      ======    ======    ========================
9          VLAN0009     DYNAMIC   ACTIVE    ge11(u) ge12(u) ge33(u) ge14(u)
```

Figure 31. SHOW VLAN DYNAMIC

Related Commands

"SHOW VLAN ALL" on page 193

"SHOW VLAN BRIEF" on page 195

"SHOW VLAN STATIC" on page 198

SHOW VLAN STATIC

Syntax

```
show vlan static
```

Parameters

none

Description

Use the SHOW VLAN STATIC command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW VLAN STATIC command and a sample of the output:

```
switch3#show vlan static
```

See Figure 32 for an sample display.

```
(switch3)# show vlan static
VLAN ID    Name        Type     State    Member ports
                                         (u)-Untagged, (t) Tagged
=======    =======     ======   ======   ========================
1          default     STATIC   ACTIVE   ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
                                         ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
                                         ge13(u) ge14(u) ge15(u) ge16(u)
                                         ge17(u) ge18(u) ge19(u) ge20(u)
                                         ge21(u) ge22(u) ge23(u) ge24(u)
                                         ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3          VLAN0003    STATIC   ACTIVE   ge5(u) ge7(t)
4          VLAN0004    STATIC   ACTIVE   ge7(t)
```

Figure 32. SHOW VLAN STATIC

Related Commands

"SHOW VLAN ALL" on page 193

"SHOW VLAN BRIEF" on page 195

"SHOW VLAN DYNAMIC" on page 197

SWITCHPORT TRUNK ALLOWED VLAN

Syntax

```
switchport trunk allowed vlan add|remove VLANID

no switchport trunk vlan
```

Parameters

add — Add a VLAN to transmit and receive through the Layer-2 interface.

remove — Remove a VLAN that transmits and receives through the Layer-2 interface.

VLANID — Specifies a VLAN ID or a list of VLAN IDs. Enter a value from 2 to 4094. Set a single VLAN, VLAN range, or a VLAN list.

For a VLAN range, specify the lowest VLAN, then the highest VLAN number in the range, and separate them with a hyphen.

For a VLAN list, specify VLAN numbers separated by commas.

Note
Do not enter spaces between hyphens or commas when setting parameters for VLAN ranges or lists.

Description

Use the SWITCHPORT TRUNK ALLOWED VLAN command to change the default VLAN for an interface. Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.

Command Mode

Interface Configuration mode

Examples

The following commands add a single VLAN, VLAN 2, to the member set of port 6:

```
switch#configure terminal

switch(config)#interface ge6

switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan add 2
```

The following commands add VLANs 2 through 6 to the member set of port 7:

```
switch#configure terminal

switch(config)#interface ge7

switch(config-if)#switchport mode trunk

switch(config-if)#switchport trunk allowed vlan add 2-
6
```

The following commands remove a list of VLANs from port 5:

```
switch#configure terminal

switch(config)#interface ge5

switch(config-if)#switchport mode trunk

switch(config-if)#switchport trunk allowed vlan remove
```

Related Commands

"SHOW VLAN ALL" on page 193

"SWITCHPORT MODE TRUNK" on page 131

VLAN

Syntax

```
vlan <2-4094> name NAME state enable|disable
```

Parameters

<2-4094>	Indicates the VLAN ID. Enter a value between 2 and 4094.
name	Indicates the name of the VLAN. Enter a text value.
state	Indicates the active state of the VLAN. Choose from the following:
	enable — Activates the VLAN.
	disable — Inactivates the VLAN.

Caution
You may not create a VLAN with a VLAN ID of 1. This is the default VLAN.

Command Mode

VLAN Configuration mode

Description

Use the VLAN command to create a VLAN, assign a name to it, and set the state of the VLAN.

Example

The following commands create a VLAN 2 with a name of “Sales” and enable it:

```
switch# configure terminal

switch(config)# vlan database

switch(config-vlan)# vlan 2 name Sales state enable
```

Related Commands

“VLAN ACCESS-MAP” on page 203

“VLAN DATABASE” on page 204

VLAN ACCESS-MAP

Syntax

```
vlan access-map NAME <1-65535>
```

Parameters

NAME Specifies the name of the access map and the sequence to insert or delete it from an existing access-map entry.

Command Mode

Configuration Terminal mode

Description

Use the VLAN ACCESS-MAP command to create a VLAN access-map, name it, and determine the sequence to insert it to or delete it from an existing access map entry.

Example

The following commands create a VLAN access-map named "Map 4" and gives it a priority of 1:

```
switch# configure terminal

switch(config)# vlan access-map "Map 4" 1
```

Related Commands

"VLAN" on page 202

VLAN DATABASE

Syntax

```
vlan database
```

Parameters

none

Command Mode

Configuration Terminal mode

Description

Use the VLAN DATABASE command to enter the VLAN configuration mode. After you enter the VLAN mode, the prompt changes to indicate the new mode and you can enter commands to add, delete, or modify values associated with a single VLAN.

Example

The following commands permits access to the VLAN Configuration mode and displays the new prompt that indicates the new mode:

```
switch# configure terminal

switch(config)# vlan database

switch(config-vlan)#
```

Related Commands

“VLAN” on page 202

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